SEER Enterprise Shared Database Administrator's Guide

SEER for Software Release 8.5
SEER for IT Release 3.2
SEER for Hardware Release 8.0
SEER for Manufacturing 8.4
SEER for Systems Engineering 3.2

July 2023

1. Introduction

The SEER Enterprise Shared Database is a relational database shared between SEER for Software (SEER-SEM) SEER for IT (SEER-IT), SEER for Hardware (SEER-H), SEER for Manufacturing (SEER-MFG), and SEER for Systems Engineering (SEER-SYS). SEER-SEM, SEER-IT, SEER-H, SEER-MFG, and SEER-SYS provides users with the option of maintaining and sharing project data in a database. The purpose of this document is to provide systems and database administrators with the procedures and technical details for setting up a database for SEER application users. SEER application users who wish to set up desktop databases for their individual use should also read this document. SEER application users who do not intend to use the database capability do not require the information presented in this administrator's guide.

2. Definitions, Acronyms, and Abbreviations

SEER Enterprise Shared Database (SEER-DB): the relational database where data for one or more SEER applications are maintained. More specifically, SEER-DB refers to the database schema, since a user can choose to have a separate instance of SEER-DB for each SEER application, as well as to have multiple instances of SEER-DB for any given SEER application.

SEER Database: an instance of SEER-DB containing the schema extensions required for SEER-SEM, SEER-IT, SEER-H and SEER-MFG; or the database schema thereof.

SEER Applications: refers to SEER for Software (SEER-SEM), SEER for IT (SEER-IT), SEER for Hardware (SEER-H), SEER for Manufacturing (SEER-MFG), and SEER for Systems Engineering (SEER-SYS).

Local Machine: (context-sensitive) the machine where the referenced activity or task is being performed.

Remote Machine: (context-sensitive) a machine other than the machine where the referenced activity or task is being performed.

Local Database: a database on the *local machine*.

Remote Database: a database on a *remote machine*.

DBMS: Database Management System.

RDBMS: Relational Database Management System.

DSN: Data Source Name

3. Architecture Basics

Relational Database

SEER Database is a relational database.

ODBC

SEER applications accesses instances of SEER Database via the ODBC call interface.

SQLs

All data types used in the SEER Database schema are ANSI-SQL data types. While SEER applications accesses instances of SEER Database via the ODBC call interface, the underlying database queries are implemented with ANSI SQL.

4. Platforms

Database Platforms

The software design of SEER applications allows an instance of SEER Database to be hosted by any ANSI-SQL-compliant relational database management system (RDBMS), which has an ODBC driver available for the target operating system.

The current release of SEER applications has been tested for use with Microsoft SQL Server (2014, 2016, 2017, 2019 and 2022) and Microsoft SQL Server Express (2014, 2016, 2017, 2019 and 2022). The SEER Database Set-Up Utility delivered with the current release of SEER supports Microsoft SQL Server (2014, 2016, 2017, 2019 and 2022) and Microsoft SQL Server Express (2014, 2016, 2017, 2019 and 2022).

Operating Systems for the Database Server

The software design of SEER applications allows an instance of SEER Database to be hosted by a RDBMS on any operating system for which an ODBC driver is available for the given RDBMS.

The current release of SEER applications has been tested for use with a database server running Microsoft Windows (10, 11, Server 2012, Server 2012R2, Server 2016, Server 2019, and Server 2022). The SEER Database Set-Up Utility delivered with the current release of SEER applications support only Microsoft Windows (10, 11, Server 2012, Server 2012R2, Server 2016, Server 2019, and Server 2022).

5. Getting Started

Utilities

5.1.1 SEER Database Set-Up Utility (for Windows)

To perform a basic database set-up for SEER on Microsoft SQL Server (or SQL Server Express), from a Windows machine, run the *SEER Database Set-Up Utility*.

The *SEER Database Set-Up Utility* provides options to perform one or more of the following tasks.

- Create or upgrade an instance of SEER Database.
- Configure an ODBC data source, on the local machine (i.e. the machine where the utility is run), corresponding to the newly created or upgraded SEER Database.

5.1.1.1 Current Limitations

The *SEER Database Set-Up Utility* currently supports only Microsoft SQL Server (2014, 2016, 2017, 2019 and 2022), and Microsoft SQL Server Express (2014, 2016, 2017, 2019 and 2022). Only a Windows version of the utility is currently available.

5.1.1.2 File Location

The *SEER Database Set-Up Utility* is a separate download from the main edition package. Look for a link to the SEER DB Setup on your product download page. Once downloaded and extracted, look for a folder called SEER-DB Setup.

5.1.1.3 How to Run the Utility

To start the utility, run the "setup.exe" file from the SEER-DB Setup folder and follow the instructions. In order to create or upgrade a database, the user running the utility must have sufficient privileges and access to the database server.

5.1.1.4 Creating the SEER Enterprise Database directly from scripts

In certain situations it may be better to create the database directly from scripts rather than from the packaged installer. The batch file CreateSeerDb.vbs is located in the \DBSETUP subfolder of the DB installer; there are folders for MS SQL and Oracle. The following information applies to the MS SQL batch file only.

1. *CreateSeerDb.vbs* needs to be run as an argument to the *cscript* command in a DOS command window.
2. In the DOS command window, the user needs to change directory (*cd*) to the directory containing *CreateSeerDb.vbs* before running it. *CreateSeerDb.vbs* looks for SQL scripts in the current directory, and data files in the "Data" subdirectory.
3. Use the SQL Server "sa" login, or equivalent, to create or upgrade an instance of SEER-DB. Using a trusted connection (i.e. with the user's Windows domain login) will be fine if the user is a member of the built-in administrator role in SQL Server. However, if the user owning the database will also be set up as a SEER user, complications may arise in the setup and handling of SEER project permissions.
4. Run *CreateSeerDb.vbs* by typing ***"cscript CreateSeerDb.vbs [options]"*** in the DOS command Window where [options] are various arguments to the routine. One "option" that actually is required is the model, necessary for the creation of model-specific tables. For example, if you are creating a SEER Database for SEER-SEM, the command would be ***"cscript CreateSeerDb.vbs /WITHSEM".*** Following are specific guidance on its options; the user can alternately type ***"cscript CreateSeerDb.vbs /?"*** to get this list.
    - An "isql not found" error can be resolved using the command line option ***"/MSDECOMPATIBLE"***, which will make *CreateSeerDb.vbs* look for *osql* instead of *isql*. *osql* is installed with SQL Server client utilities as well as SQL Express (formerly MSDE), whereas *isql* is installed only with SQL Server on a server installation. (In a future release, we may eliminate the *"/MSDECOMPATIBLE"* option and have *CreateSeerDb.vbs* use *osql* for all cases.)
    - The ***"/MSQLNAMED"*** option is required for specifying a named instance of SQL Server in the ***<server name>*** argument to the ***"/SERVER:<server name>"*** option; i.e. for other than the default unnamed instance of SQL Server on a given machine.
    - The *"/RDB"* option is intended for SEER-HD, so the user can ignore that.
    - The *"/WITHMFG"* and *"/ADDMFG"* options are placeholders that do not do anything, since SEER-DB does not currently support MFG. The ***"/WITH<product code>"*** option tells *CreateSeerDb.vbs* that the user wants to create the product-specific portion of the database schema.
    - The ***"/ADD<product code>"*** option allows the user to create the product-specific portion of the database schema in an existing instance of SEER-DB. CAUTION: when using the ***"/ADD<product code>"*** option without the ***"/UPGRADE"*** option, make sure that the set of underlying SQL scripts in the directory are the same as when the target SEER-DB instance was created or last upgraded; otherwise the product-specific portion of the database schema created may be incompatible with the core database schema that already exists. In practice, it is probably best to always use the ***"/ADD<product code>"*** option in conjunction with the ***"/UPGRADE"*** option.

- The ***"/UPGRADE"*** option tells *CreateSeerDb.vbs* that the user wants to upgrade the target SEER-DB instance to the current version, and it will upgrade the product-specific portions of the database schema if and only if they have been previously created. Specifying the ***"ADD<product code>"*** option in conjunction with the ***"/UPGRADE"*** option tells CreateSeerDb.vbs that, in addition to upgrading the target SEER-DB instance, the user wants to also create the product-specific portion of the database schema.

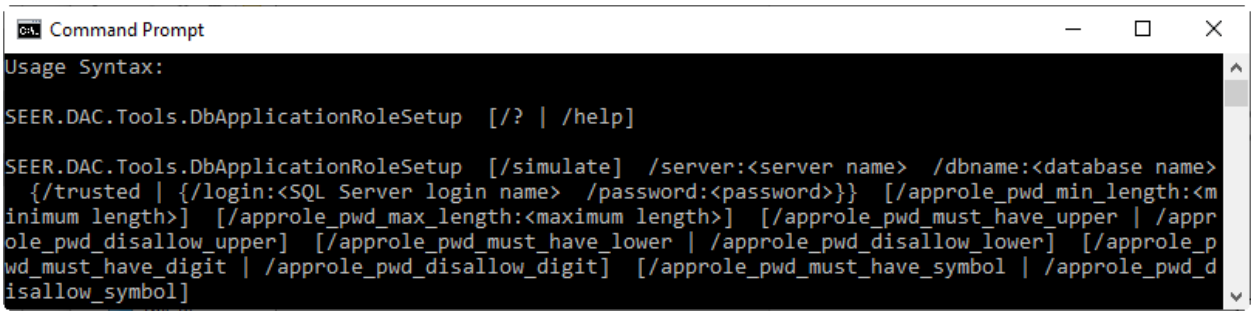
```
Usage: cscript [cscript_options] CreateSeerDb.vbs [options]

options:
  [/SERVER:<server name>|<IP address>]
  [/MSSQLNAMED]
  [/MSDECOMPATIBLE]
  [/DBNAME:<database name>]
  {
    [/NOCONFIRM]
    [
      /TRUSTED
      | {/DBMSLOGIN:<DBMS login> [/PASSWORD:<password>]}
    ]
  } |
  {
    /SILENT
    {
      /TRUSTED
      | {/DBMSLOGIN:<DBMS login> /PASSWORD:<password>}
    }
  }
  [/RDB]
  {
    {[/WITHSEM] [/WITHH] [/WITHMFG] [/WITHIT]}
    | {[/ADDSEM] [/ADDH] [/ADDMFG] [/ADDIT]}
    | {/UPGRADE [/ADDSEM] [/ADDH] [/ADDMFG] [/ADDIT]}
  }
  [/LOGPATH:<log file path>]
  [/OUTDIR:<output dir. path>]
  [/EXITCODEFILE:<exit-code file path>]
  [/DEBUG | /TRACE]
```

5. Create an ODBC DSN corresponding to the new instance of SEER Database.
6. Run SEER.DAC.Tools.DbApplicationRoleSetup.exe.

5.1.1.5 Running SEER.DAC.Tools.DbApplicationRoleSetup.exe in Command-Line Mode

In the DOS command window, change directory to where the EXE is. Type "SEER.DAC.Tools.DbApplicationRoleSetup /?" to print the command syntax, as shown in the screen shot below:



A typical command would look like the following:

```
SEER.DAC.Tools.DbApplicationRoleSetup /server:SERVERNAME /dbname:SEERDBNAME
/login:sa /password:password
```

The command-line mode supports only SQL Server.

There are command-line arguments to specify rules for the randomly generated passwords:

- Minimum length
- Maximum length
- Must have at least one upper-case letter
- Must have at least one lower-case letter
- Must have at least one numeric digit
- Must have at least one special character
- Must not contain upper-case letters
- Must not contain lower-case letters
- Must not contain numeric digits
- Must not contain special characters

5.1.1.6 Troubleshooting

When running the scripts manually, some do not execute the first time through – Try removing ("dropping") the old database and re-installing.

In SEER you successfully connect to the new SEER DB (from the Collaboration menu) and yet you receive an "Unable to connect to or initialize…" error when invoking File / Open from Database – Permissions may not have been correctly configured. Try running SEER.DAC.Tools.DbApplicationRoleSetup.exe.

Prerequisites for SEER Database

5.1.2 Operating System

To set up a SEER Database the host machine for the database, (i.e. the database server,) must be running Windows 2012 or above.

5.1.3 DBMS

To set up a SEER Database the host machine for the database must have an instance of one of the following DBMS's installed.

- SQL Server 2014, 2016, 2017, 2019 or 2022
- SQL Server Express 2014, 2016, 2017, 2019 or 2022

For information on other DBMS's, see the section, "Database Platforms".

Basic Steps

5.1.4 For New SEER Application Installation

There are five basic steps in setting up a SEER Database for use with a new installation of SEER applications:

1. Create an instance of SEER Database.
2. Create DBMS login(s).
3. Create/assign database user(s) for the new SEER Database.
4. Configure an ODBC data source, on each user's machine, corresponding to the new SEER Database.
5. Set the default SEER Database, for each user's "local" or "client" installation of SEER applications, to the new SEER Database.

The first four steps are required, in order for a user to access a SEER Database from SEER applications. The last step, setting the default SEER Database, is optional. A SEER application user can set his/her default SEER Database at any time, within the SEER application.

Note that Step 5, setting the default SEER Database for a user, can only be performed after SEER application is installed on the user's machine. All other steps can be performed before or after the installation of SEER applications.

5.1.4.1 Required Administrative Privileges

To create an instance of SEER Database, the user must have DBMS administrative privileges for the target instance of the DBMS, where the database is to be created. The *SEER Database Set-Up Utility* assumes the user has the appropriate administrative privileges.

5.1.4.1.1 For SQL Server (and SQL Server Express)

For SQL Server (and SQL Server Express), a user will have the required administrative privileges to create a database, if one of the following conditions is satisfied.

- The user has access to the SQL Server built-in administrator login, "sa", for the target instance of SQL Server (2014, 2016, 2017, 2019 or 2022) or SQL Server Express (2014, 2016, 2017, 2019 or 2022).
- The user has access to a SQL Server login with privileges to create a database, on the target instance of SQL Server (2014, 2016, 2017, 2019 or 2022) or SQL Server Express (2014, 2016, 2017, 2019 or 2022).
- The user is a member of the Windows built-in administrators group, "Administrators", on the machine where the target instance of SQL Server (2014, 2016, 2017, 2019 or 2022) or SQL Server Express (2014, 2016, 2017, 2019 or 2022) is located.

5.1.5 For SEER Application Upgrade

Upgrade requires that SEER-DB is installed on SQL Server (2014, 2016, 2017, 2019 or 2022) or SQL Server Express (2014, 2016, 2017, 2019 or 2022). Before running the set up for an upgrade, if the current database is installed on SQL Server 2000, it shall be moved to SQL Server 2005, 2008, 2008R2, 2012, 2014, 2016, 2017 or 2019. If SQL Server 2000 is only used for SEER-DB, it is recommended to upgrade the SQL Server 2000 to SQL Server 2014, 2016, 2017, 2019 or 2022. For details, refer to the Microsoft SQL Server (2014, 2016, 2017, 2019 or 2022) documentation.

Database set-up for an upgrade of an existing SEER application installation requires one basic step, provided one or more SEER Databases have previously been set up for the given SEER application installation site:

1. Upgrade the existing instance(s) of SEER Database.

All previously existing database user accounts remain on upgrade, but all the permissions previously granted to "SeerDbUser" database role are revoked. "SeerDbUser" database role is renamed to "SeerDbUser_DEPRECATED" and shall be deleted manually by the database administrator.
If no SEER Database has previously been set up for the given SEER application installation site, database set-up requires the same basic steps as those for a new SEER application installation.

On upgrade the owners of the projects previously saved to the database are set to "dbo", and shall be reassigned by the user with either "seer_admin_dbrole" or "seer_project_admin_dbrole" database role. (See section 11.2.3 for more details.) The assignment shall be done in order for the users to see the project in the list of projects saved to SEER-DB.

5.1.5.1 Upgrade from SEER-DB for SEER for Software 7.3.X

After completing the upgrade install, database administrator shall perform the steps described in Section 7 to add new users and redefine the existing users.

All previously existing database user accounts remain on upgrade, but all the permissions previously granted to "SeerDbUser" database role are revoked. "SeerDbUser" database role is renamed to "SeerDbUser_DEPRECATED" and shall be deleted manually by the database administrator.
If no SEER Database has previously been set up for the given SEER application installation site, database set-up requires the same basic steps as those for a new SEER application installation.

Once the users are defined, the steps described in Section 11 of this guide shall be performed.

On upgrade the owners of the projects previously saved to the database from SEER for Software 7.3.X are set to "dbo", and shall be reassigned by the user with either "seer_admin_dbrole" or "seer_project_admin_dbrole" database role. (See section 11.2.4 for more details.) The assignment shall be done in order for the users to see the project in the list of projects saved to SEER-DB.

5.1.5.2 Upgrade from SEER-DB for SEER for Software 8.0.X

After completing the upgrade install, steps described in section 11.1.3 shall be performed to set General User Permissions.

5.1.5.3 Required Administrative Privileges

To upgrade an instance of SEER Database, the user must have database (i.e. dba or dbo) administrative privileges for the database to be upgraded. The *SEER Database Set-Up Utility* assumes the user has the appropriate administrative privileges.

5.1.5.3.1 For SQL Server (and SQL Server Express)

For SQL Server (and SQL Server Express), a user will have the required administrative privileges to upgrade a database, if one of the following conditions is satisfied.

- The user has access to the SQL Server built-in administrator login, "sa", for the target instance of SQL Server (2014, 2016, 2017, 2019 or 2022) or SQL Server Express (2014, 2016, 2017, 2019 or 2022).
- The user has access to a SQL Server login assigned to a database user mapped, in turn, to the database owner ("dbo") of the database to be upgraded.
- The user is a member of the Windows built-in administrators group, "Administrators", on the machine where the target instance of SQL Server (2014, 2016, 2017, 2019 or 2022) or SQL Server Express (2014, 2016, 2017, 2019 or 2022) is located.

5.1.6 Tasks Performed by Utilities

Utilities are available to perform one or more of the steps required in the set-up of a SEER Database. The following table lists the utilities, along with the operating system(s) and DBMS product(s) supported by each utility. For details on each utility, please refer to Section 5.1, "Utilities".

Table 5-1

Utility	Operating System on Local Machine	DBMS
SEER Database Set-Up Utility	Windows	SQL Server (2014, 2016, 2017, 2019 or 2022), SQL Server Express (2014, 2016, 2017, 2019 or 2022)

5.1.6.1 SEER Database Set-Up Utility (for Windows)

The *SEER Database Set-Up Utility (for Windows)* provides options to perform one or more of the following tasks.

- Create or upgrade an instance of SEER Database, on SQL Server (or SQL Server Express).
- Configure an ODBC data source, on the local machine (i.e. the machine where the utility is run), corresponding to the newly created or upgraded SEER Database on SQL Server (or SQL Server Express).

5.1.7 Manual Steps

5.1.7.1 Creating DBMS Logins and Database Users

DBMS logins and database users need to be created and assigned manually by the database administrator for a new SEER Database. A database user can be associated with a SQL user, Windows user or Windows Group. When a new SEER Database is created, a database administrator shall assign one user a "seer_admin_dbrole" database role. Then either the database administrator or a user with the "seer_admin_dbrole" database role can assign users to "seer_user_admin_dbrole" and "seer_project_admin_dbrole" database roles. For higher security, it is recommended you assign only one user per role.

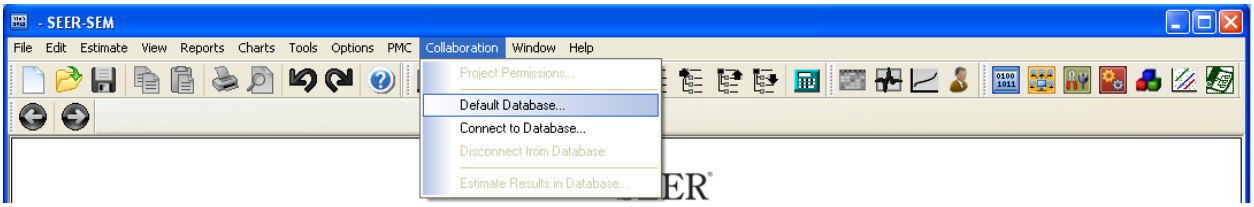
For details on creating DBMS logins and database users, see the section, "Access Control".

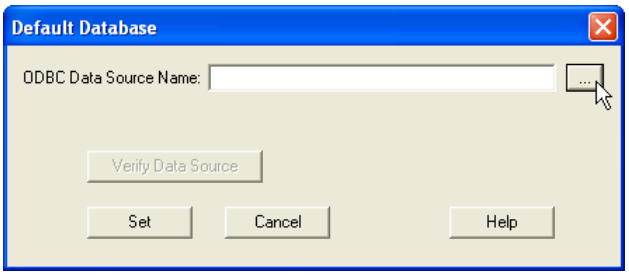
5.1.7.2 Configuring ODBC Data Sources for Users

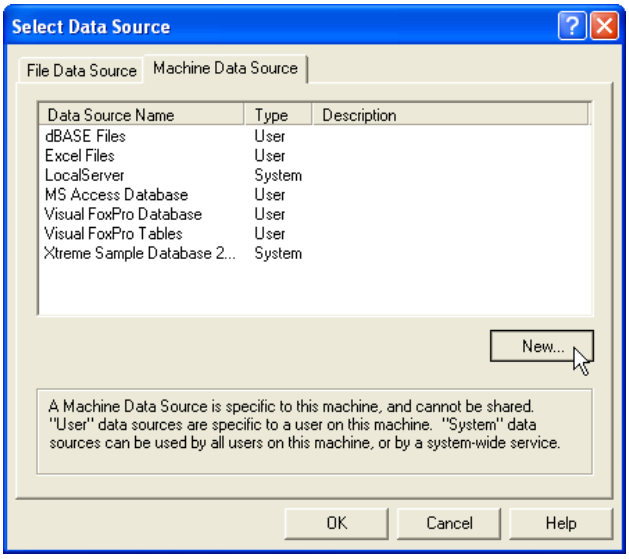
The *SEER Database Set-Up Utility* provides an option to configure an ODBC data source corresponding to the newly created or upgraded SEER Database (on SQL Server or SQL Server Express only). However, the ODBC data source can be configured only on the local machine; i.e. on the machine where the utility is run. For a shared remote database, an ODBC data source must be configured manually on each user's local machine. For details on configuring an ODBC data source, see the section, "ODBC Data Source Configuration".

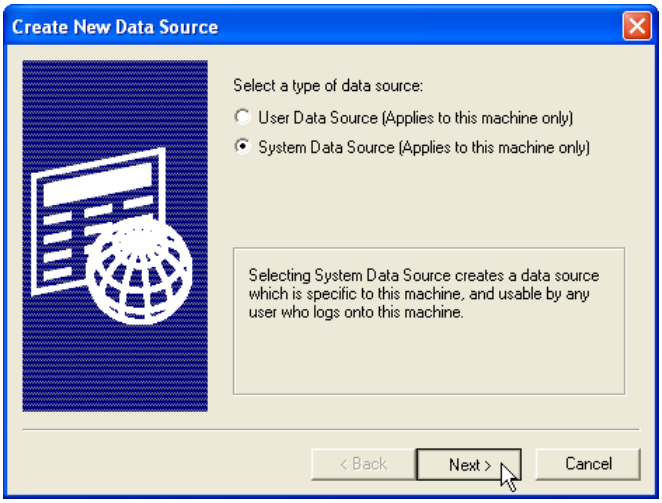
5.1.7.2.1 Configuring ODBC Data Source at SEER Application Runtime

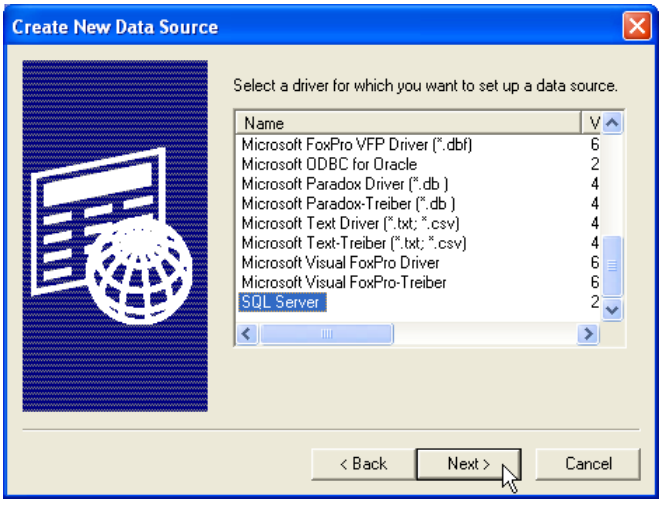
Note that an advanced user can configure new ODBC data sources while running a SEER application, provided the user knows which SEER Databases are set up for the user's version of SEER application, as well as authorized and accessible to that user. The following example demonstrates how to configure a new ODBC data source, corresponding to the desired SEER Database, while setting the default database from the SEER application. Configuring the default database is the same process in other SEER applications that support SEER Database, from "Collaboration" menu → "Default Database".

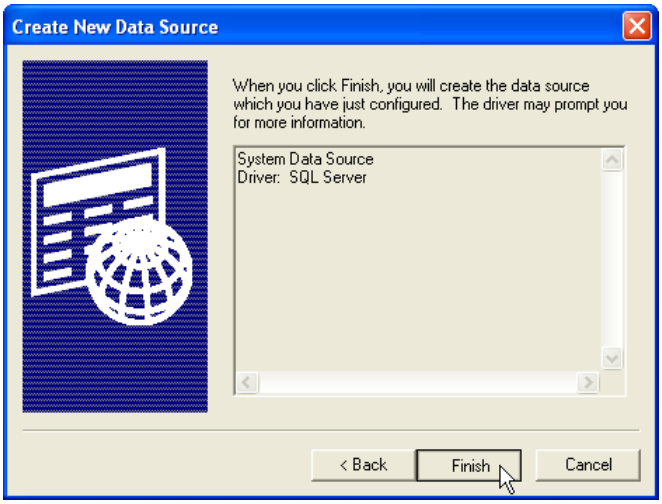


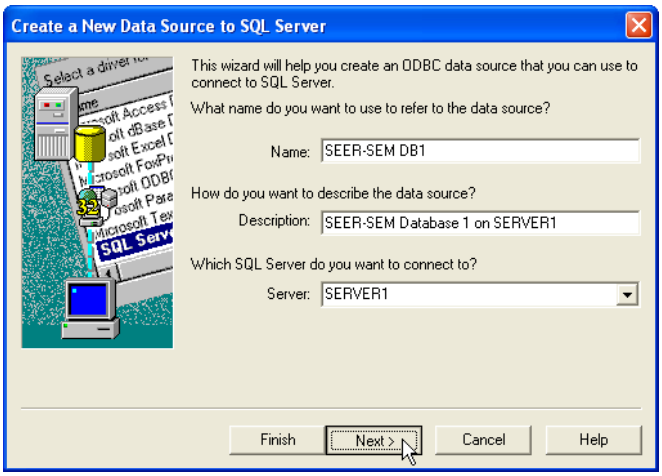


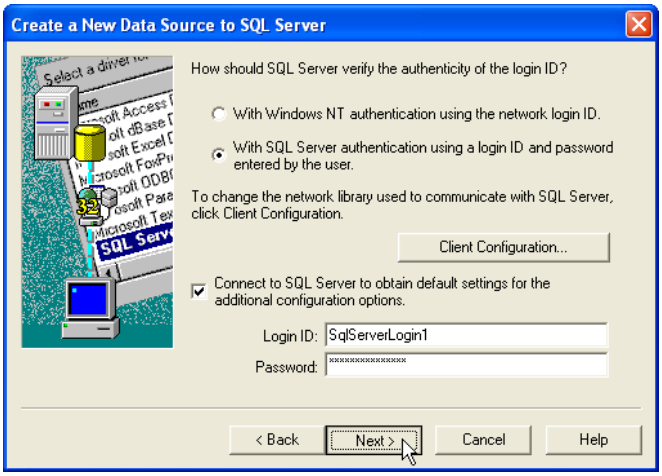

Select Data Source
File Data Source
Machine Data Source
Data Source Name
Type
Description
dBASE Files
User
Excel Files
User
LocalServer
System
MS Access Database
User
Visual FoxPro Database
User
Visual FoxPro Tables
User
Xtreme Sample Database 2...
System
New...
A Machine Data Source is specific to this machine, and cannot be shared. "User" data sources are specific to a user on this machine. "System" data sources can be used by all users on this machine, or by a system-wide service.
OK
Cancel
Help


Create New Data Source
Select a type of data source:
User Data Source (Applies to this machine only)
System Data Source (Applies to this machine only)
Selecting System Data Source creates a data source which is specific to this machine, and usable by any user who logs onto this machine.
< Back
Next >
Cancel

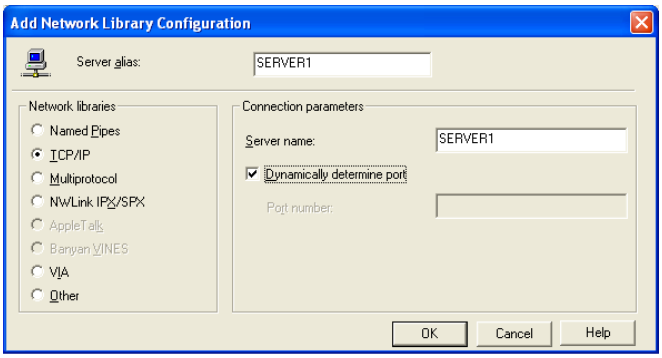

Create New Data Source
Select a driver for which you want to set up a data source.
Name
V
Microsoft FoxPro VFP Driver (*.dbf)
6
Microsoft ODBC for Oracle
2
Microsoft Paradox Driver (*.db)
4
Microsoft Paradox-Treiber (*.db)
4
Microsoft Text Driver (*.txt; *.csv)
4
Microsoft Text-Treiber (*.txt; *.csv)
4
Microsoft Visual FoxPro Driver
6
Microsoft Visual FoxPro-Treiber
6
SQL Server
2
< Back
Next >
Cancel



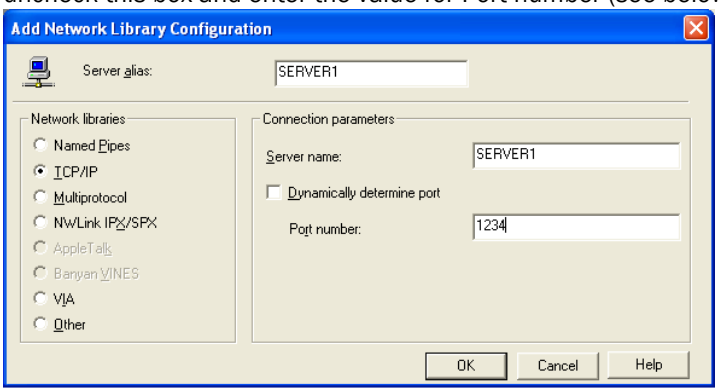




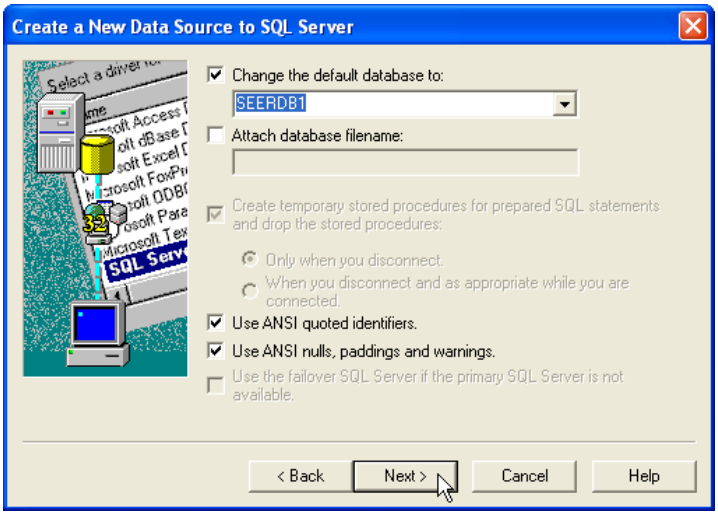
Note: sometimes for extra security a TCP/IP port number may be required since 1433 is widely known and vulnerable to attack. If planning on using a TCP/IP port number, this value may be entered in Client Configuration (see below).

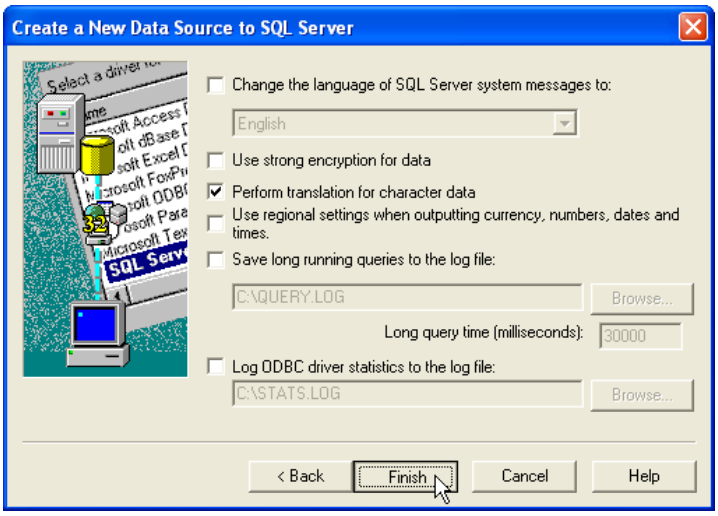


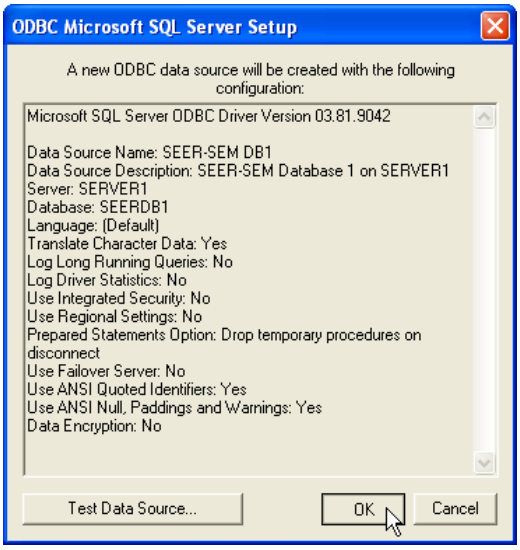
By default, the "Dynamically determine port" box is checked. If you have a specific port number to use then uncheck this box and enter the value for Port number (see below).



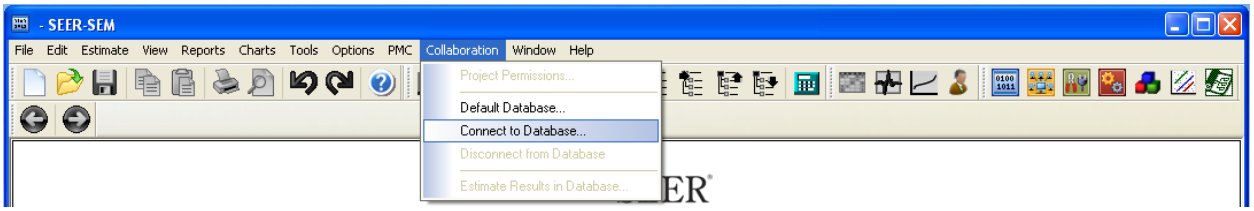
Click OK to leave the Add Network Library Configuration dialog and return to the New Data Source setup and click Next to move to the next step shown below.

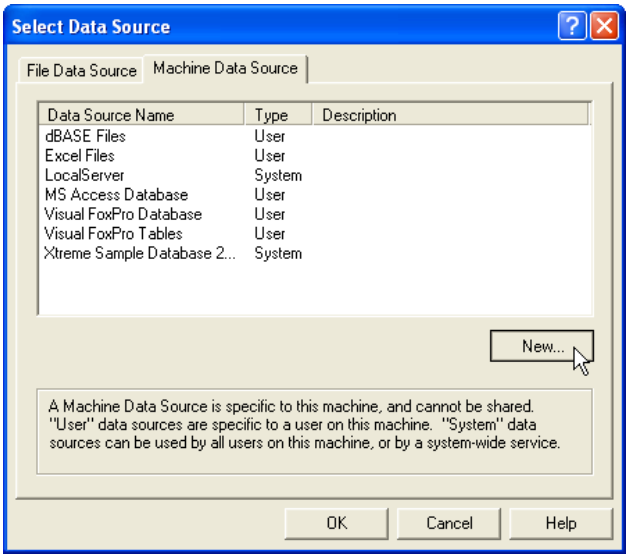






As long as the default database setting is left blank, the user will also have an opportunity to configure a new ODBC data source whenever the user selects the menu command, “Collaboration” → “Connect to Database”.



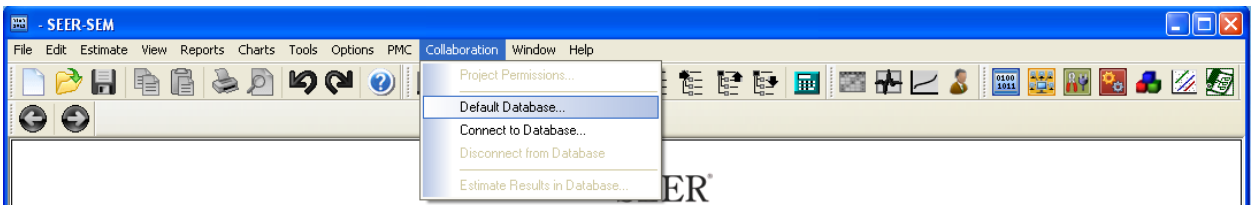


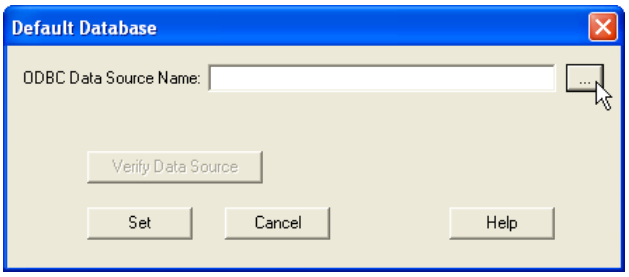
5.1.7.3 Setting Default SEER Database

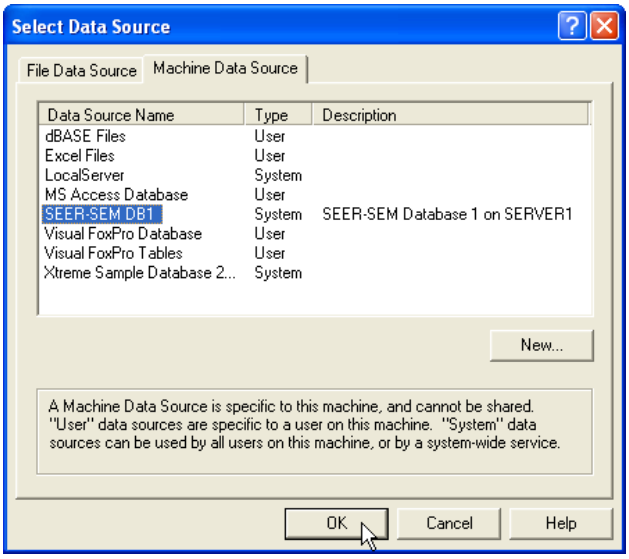
The *SEER Database Set-Up Utility* provides an option to set the default SEER Database. However, the default SEER Database can only be set on the local machine; i.e. on the machine where the utility is run. For a shared network database, the default SEER Database must be set individually on each user's local machine. To set the default SEER Database for each SEER application user, run the *SEER Database Set-Up Utility* on the user's local machine, and select the option to set the default SEER Database only.

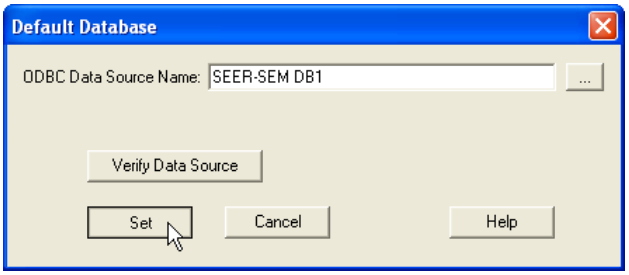
5.1.7.3.1 Setting Default SEER Database at SEER Application Runtime

Note that the default SEER Database can be set at any time within a SEER application, using the menu command, "Collaboration" → "Default Database". The user can select an existing ODBC data source, as well as configure a new ODBC data source, corresponding to the desired SEER Database. The following example demonstrates how to set the default SEER Database using an existing ODBC data source. For an example on configuring a new ODBC data source, see the section, "Configuring ODBC Data Source at SEER Application Runtime", above.









Desktop Database

A SEER application user, with a “local” or “client” installation of a SEER application, can have a local SEER Database for the user’s sole use, on the user's own machine. The use of a local SEER Database does not preclude the use of remote/network SEER Databases.

Shared Database

5.1.8 For “Client” Installations of a SEER Application

SEER application users, with “client” installations of a SEER application, can share one or more remote/network SEER Databases, on one or more network machines (i.e. database servers). The database server can be, but is NOT required to be, the same machine on which the “network” installation of SEER application resides.

5.1.9 For “Local” Installations of a SEER Application

While it is feasible for SEER users with “local” installations of a SEER application to share one or more network SEER Databases, this type of set up requires the users’ organization to enforce the following constraint.

- The “local” installations of a SEER application, for all users sharing any given network database, are of the same version (for example: If SEER-SEM 8.1.16 is the current version, all SEER Database users must have SEER-SEM 8.1.16. Any version lower than SEER-SEM 8.1.16 will not be able to save to the SEER Database).

6. Organizational Structure for Shared Databases

By Organizational Group

A SEER Database can be set up for an organizational group within the company or organization.

By Project, Program, or Initiative

Alternatively, a SEER Database can be set up for each project, program, or initiative, to be accessed across the company or organization.

Multiple Databases for the Same Project, Program, or Initiative

Multiple SEER Databases can be used for the same project, program, or initiative. However, SEER application project revisions are tracked independently in each database, and the reconciliation and/or synchronization of SEER application project revisions between two databases are NOT supported. The same limitations apply when a user maintains revisions of a project in a local database, in conjunction with a shared remote database.

6.1.1 Transferring/Copying Project Revisions between Databases

In order to transfer or copy a SEER application project revision from one SEER Database to another, the project revision must be opened from the source database and saved as a new “major baseline” in the destination database.

7. Access Control

Access control for a SEER Database, like any other database, is managed through a combination of access controls on the network, on the database server machine, on the DBMS, and on the SEER Database.

7.1 Network and Database Server Access

Access controls on the network and on the database server machine are beyond the scope of this document, and they are the responsibility of the user’s IT organization.

7.2 DBMS Access

7.2.1 SQL Server (and SQL Server Express)

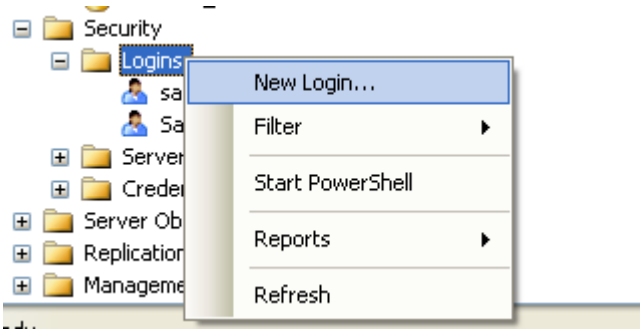
SQL Server (and SQL Server Express) supports two authentication modes for access to the DBMS: Windows network authentication and SQL Server authentication. SEER applications support, via ODBC, both modes of authentication for accessing the SEER Database on SQL Server (or SQL Server Express). This section describes how to grant a Windows user access to a SQL Server (or SQL Server Express) instance, for the desired authentication mode. For related information on the configuration of ODBC data sources, see the section, “ODBC Data Source Configuration”.

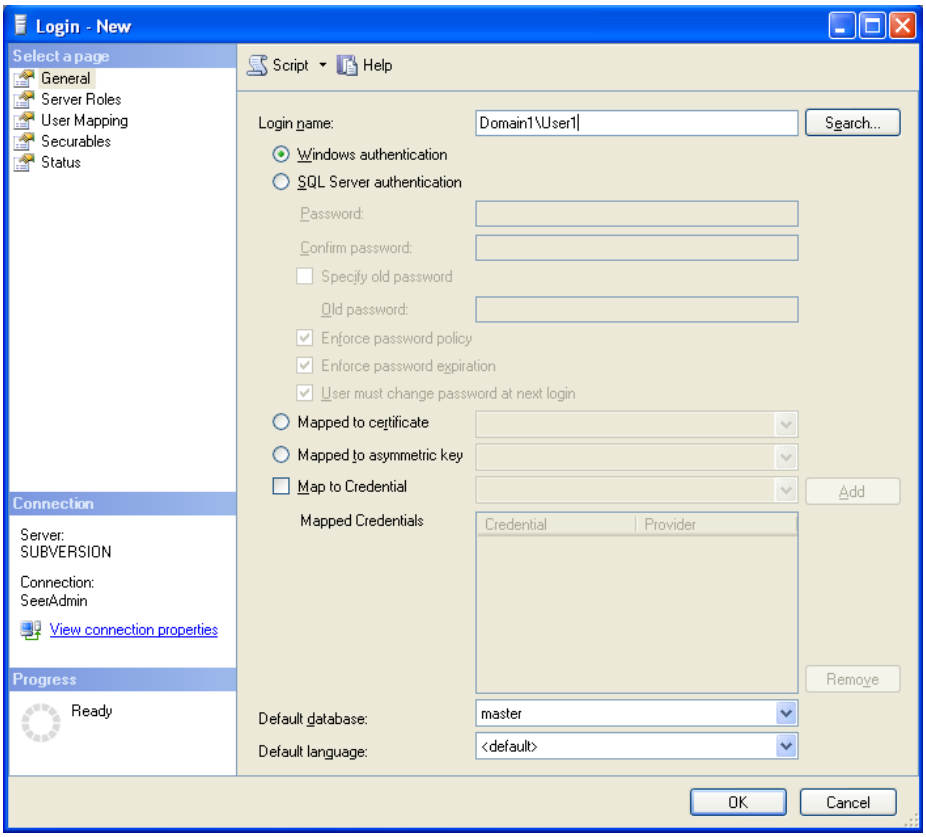
7.2.1.1 Using Windows Network Authentication

To use Windows network authentication to access a SEER Database on SQL Server (or SQL Server Express), no SQL Server logins need to be created. However, each user’s Windows network login needs to be added, as a

Windows User or Windows Group, to the target SQL Server (or SQL Server Express) instance. For details, refer to the Microsoft SQL Server (2014, 2016, 2017, 2019 or 2022) documentation.

The following example demonstrates how to grant a user's Windows network login access to a SQL Server (or SQL Server Express) instance, using the SQL Server Enterprise Manager.

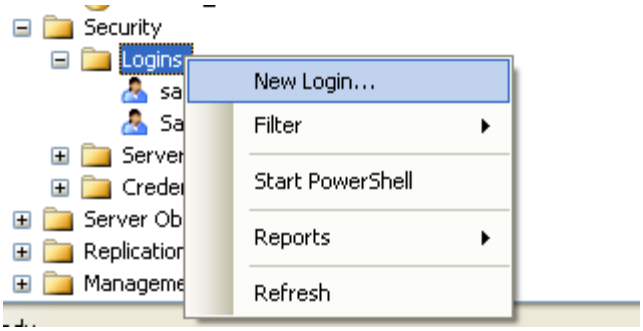


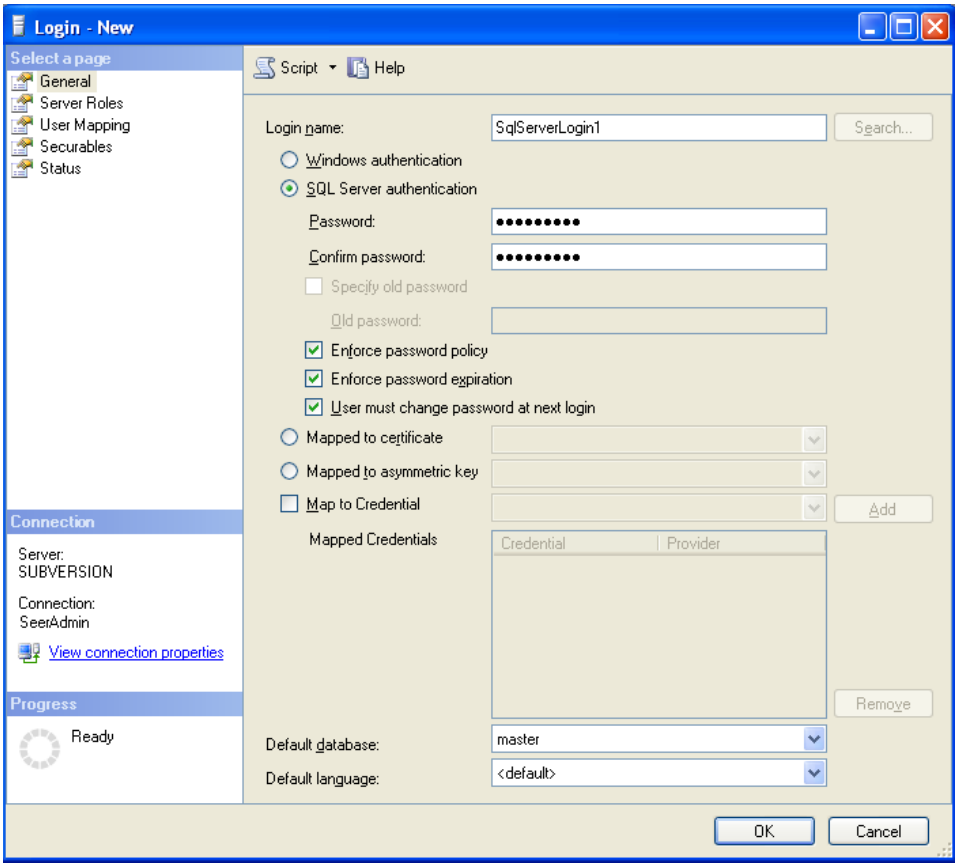


7.2.1.2 Using SQL Server Authentication

To use SQL Server authentication to access a SEER Database on SQL Server (or SQL Server Express), a SQL Server login must be created by a database administrator for each user who needs to access that database before running SEER for Software with SEER-DB and SEER Enterprise Database Manager. For details, refer to the Microsoft SQL Server (2014, 2016, 2017, 2019 or 2022) documentation.

The following example demonstrates how to create a SQL Server login on a SQL Server (or SQL Server Express) instance, using the SQL Server Enterprise Manager.





7.2.1.3 Using Mixed-Mode Authentication

To allow users the choice between Windows network authentication and SQL Server authentication (i.e. mixed-mode authentication), set up each user for both Windows network authentication and SQL Server authentication; as described in the sections above. For details, refer to the Microsoft SQL Server (2014, 2016, 2017, 2019 or 2022) documentation.

7.3 Database Access

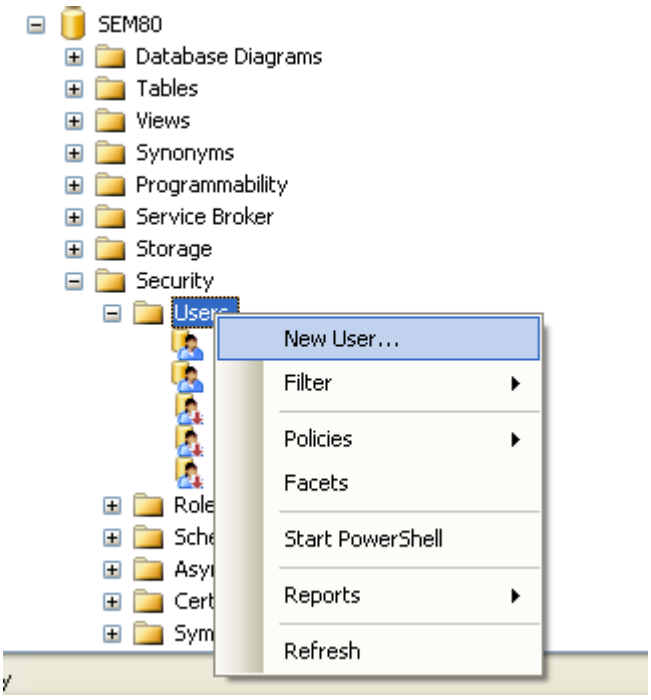
7.3.1 SQL Server (and SQL Server Express)

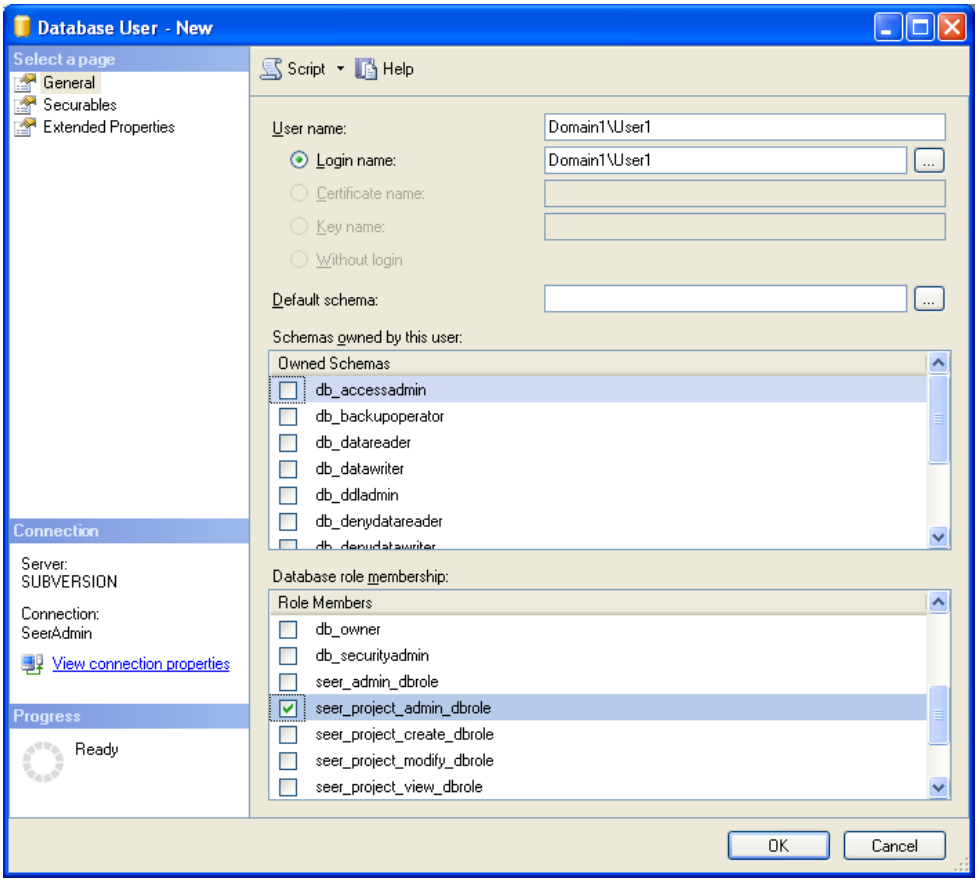
For each user who needs to access a SEER Database on SQL Server (or SQL Server Express), a database user must be created on that database, regardless of the SQL Server authentication mode to be used. In addition, each user's database user name needs to be associated with (i.e. given access from) the user's login to the SQL Server (or SQL Server Express) instance, with the minor variations described below. For details, refer to the Microsoft SQL Server documentation.

7.3.1.1 Using Windows Network Authentication

To use Windows network authentication, each user's database user name needs to be associated with that user's Windows network login, in the target SQL Server (or SQL Server Express) instance.

The following example demonstrates how to create a database user on a SQL Server (or SQL Server Express) database, and associate it with a user's Windows network login, using the SQL Server Enterprise Manager.

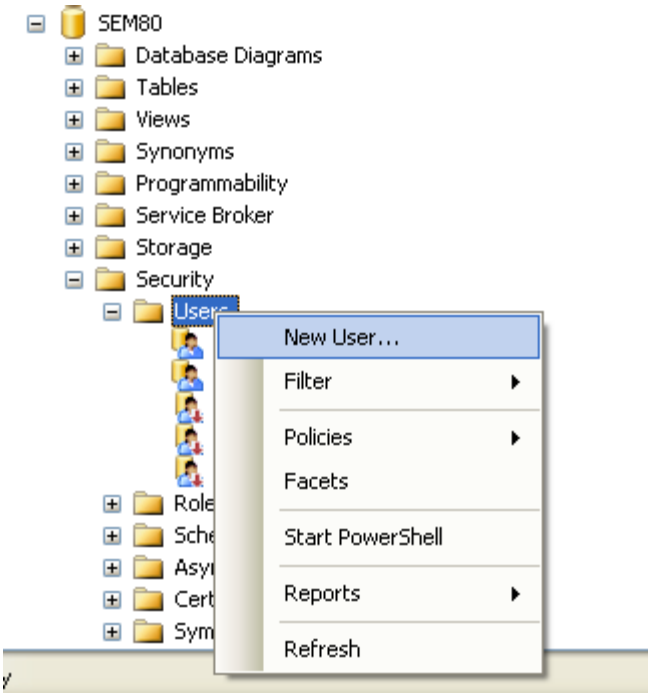




7.3.1.2 Using SQL Server Authentication

To use SQL Server authentication, each user's database user name needs to be associated with that user's SQL Server login, in the target SQL Server (or SQL Server Express) instance.

The following example demonstrates how to create a database user on a SQL Server (or SQL Server Express) database, and associate it with a SQL Server login, using the SQL Server Enterprise Manager.


SEM80
Database Diagrams
Tables
Views
Synonyms
Programmability
Service Broker
Storage
Security
New User...
Filter
Policies
Facets
Start PowerShell
Reports
Refresh

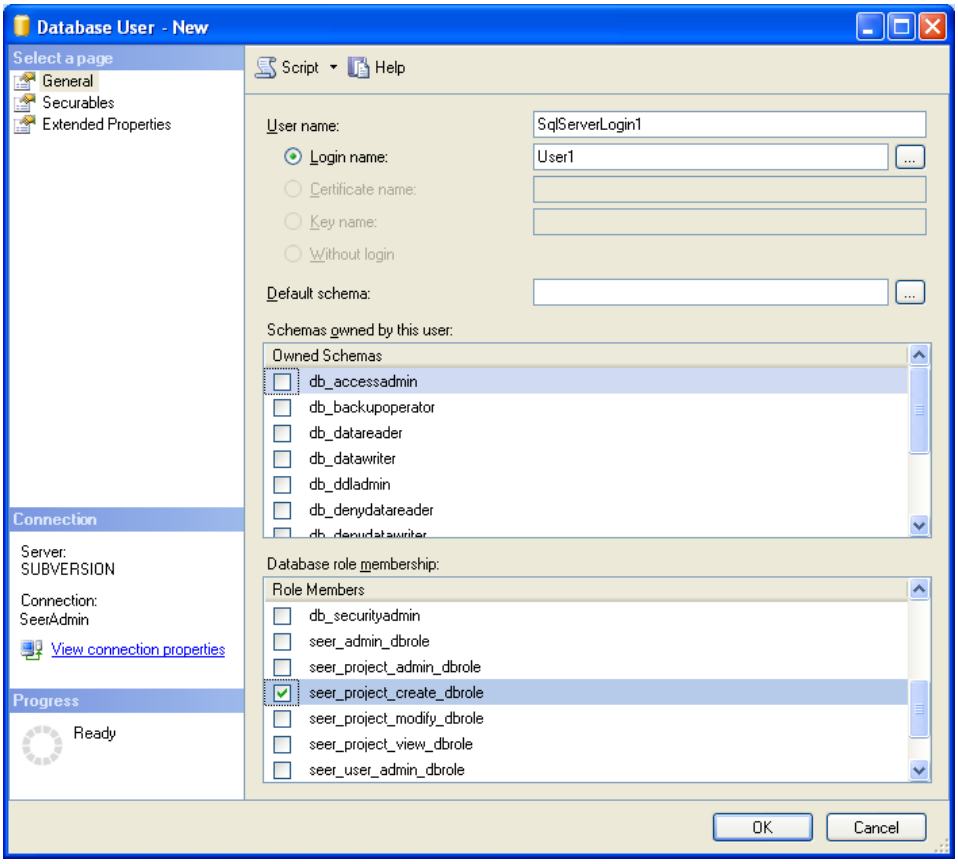

Database User - New
Select a page
General
Securables
Extended Properties
Script
Help
User name:
SqlServerLogin1
Login name:
User1
Certificate name:
Key name:
Without login
Default schema:
Schemas owned by this user:
Owned Schemas
db_accessadmin
db_backupoperator
db_datareader
db_datawriter
db_ddladmin
db_denydatareader
Database role membership:
Role Members
db_securityadmin
seer_admin_dbrole
seer_project_admin_dbrole
seer_project_create_dbrole
seer_project_modify_dbrole
seer_project_view_dbrole
seer_user_admin_dbrole
Connection
Server:
SUBVERSION
Connection:
SeerAdmin
View connection properties
Progress
Ready
OK
Cancel

Table Permissions for SEER Application Users

7.3.2 SEER Database Roles

7.4.1.1 Changes to Default SEER Database Role

In earlier releases of SEER-DB, when a new SEER Database was created from the *SEER Database Set-Up Utility*, a default database role for SEER application users, named "SeerDbUser", was created on the new database. The "SeerDbUser" database role was granted all of the table access permissions required by SEER applications. When upgrading SEER Database, all user accounts remain but all the permissions previously granted to "SeerDbUser" database role are revoked. The "SeerDbUser" database role is then renamed to "SeerDbUser_DEPRECATED", and the database administrator shall delete the role manually.

7.4.1.2 SEER Database Roles

There are three levels of admins, each with certain user assignment rights:

Seer_admin_dbrole – The "super" admin. This admin level can do anything the two following admin roles can do, in addition to actually defining any pre-existing database user as a "SEER User". This role also can assign a user's general permissions; for example, a given user may only be able to browse projects.

Seer_user_admin_dbrole – Like the Seer_admin_dbrole, this role also can define any pre-existing database user as a "SEER User". However, SEER user creation is this role's only purpose.

Seer_project_admin_dbrole – Used to administer SEER Users' relations to specific SEER projects, this role can assign project-specific permissions to individual users, and can also make a specific user the "Owner" of a project.

There also is the "SEER User" who:

- Can have varying general and project-specific permissions according to what has been specified by the admin roles above, or a specific project's owner.
- May be assigned as the "Owner" of a specific SEER project, and thus able to set other users' level of access to that project (project-specific permissions).
- If made the "Owner" of a project, may also transfer ownership to another user.

General permissions are the following; see Section 11.1.3 of the DB admin guide for detail on what these permissions specifically enable:

- Create projects
- View all project names
- View all projects
- Modify all projects
- View selected projects
- Modify selected projects

Project-specific permissions are the following:

- View
- Modify

Attributes for the project-specific permissions are:

- Allow (Note: IF Modify = 'Allow' THEN View = 'Allow')
- Deny

- No permission – permits a user to inherit permission from Windows group or database roles.

The following table summarizes the permissions information presented in this section:

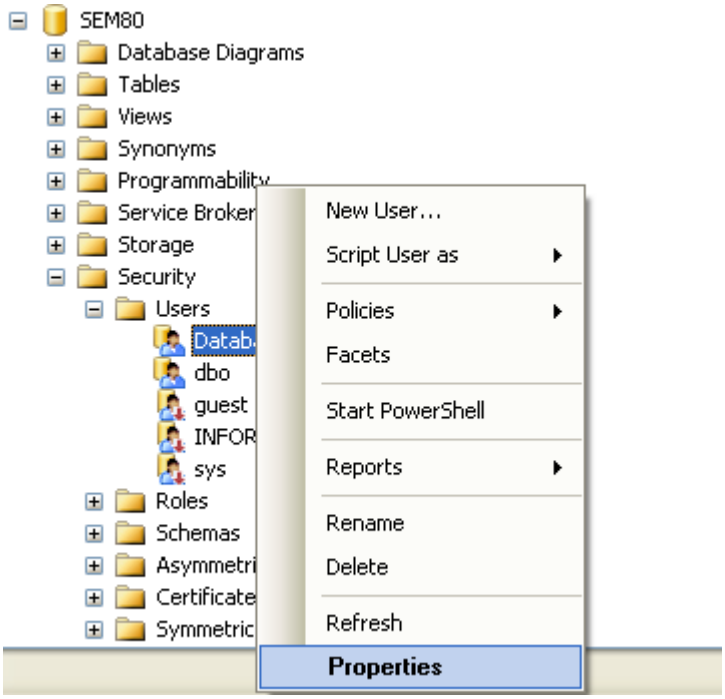
	Permissions and assignments made to SEER users				Custom Fields
Role	**Set general permissions**	**Set project-specific permissions**	**Assign project owner**	**Create SEER user (must already be a DB user)**	**Create and Manage Custom Fields**
seer_admin_dbrole	Yes	Yes	Yes	Yes	Yes
seer_user_admin_dbrole				Yes	
seer_project_admin_dbrole		Yes	Yes		
{SEER user who is a project owner}		Yes	Yes		

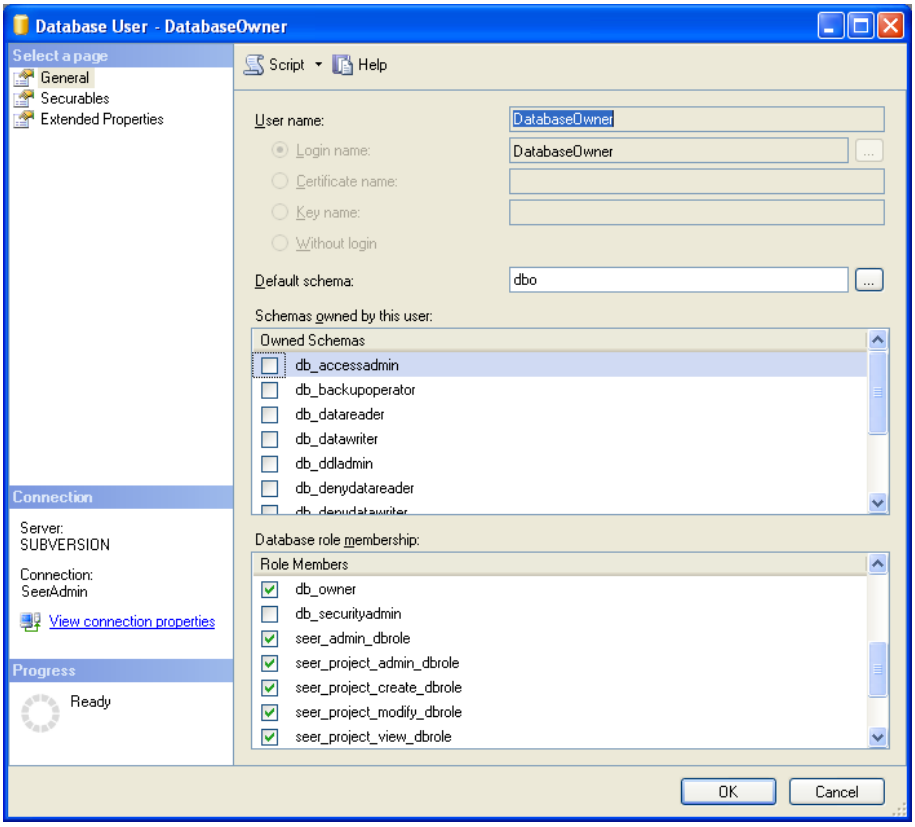
7.3.3 Assigning Users to Database Role

A database administrator can manage users through a combination of access controls on the network, on the database server machine, on the DBMS, and on the SEER Database.

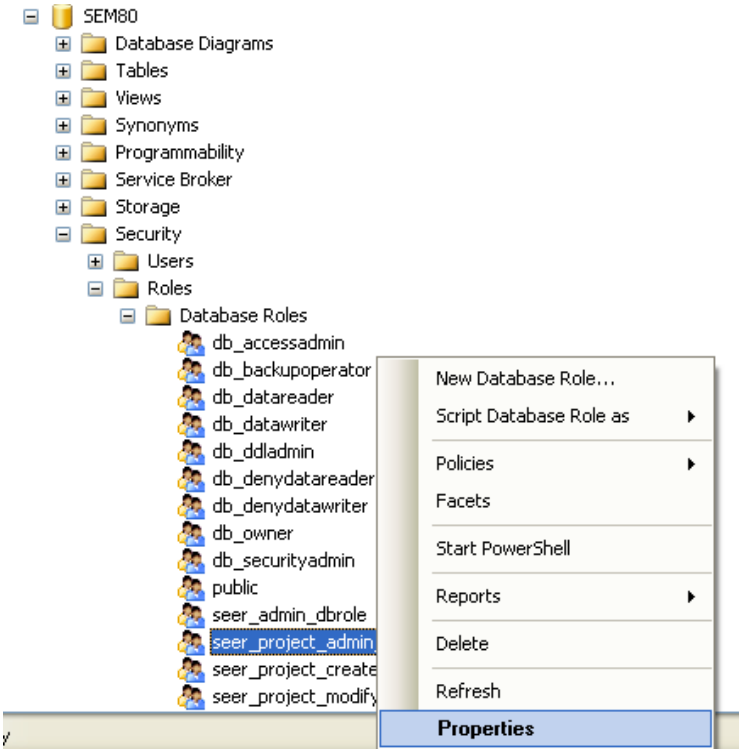
7.3.3.1 SQL Server (and SQL Server Express)

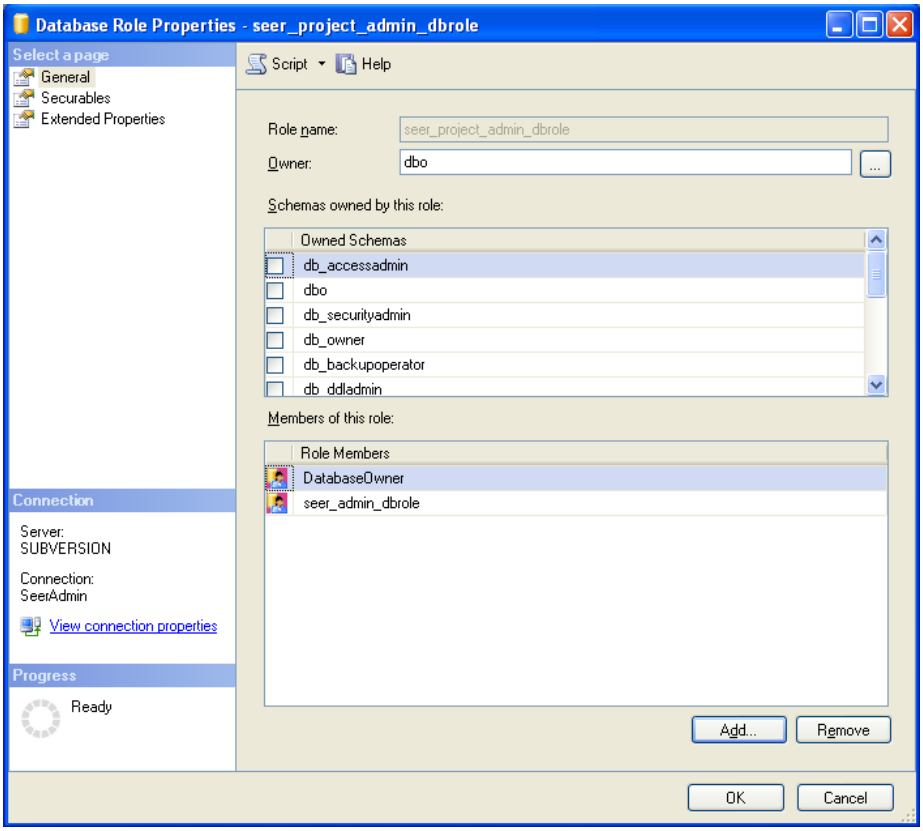
The following example demonstrates how to assign a database role to a database user, from the "Database User" dialog, in the SQL Server Enterprise Manager. Note that the database role can also be assigned at the time the database user is created, from the same "Database User" dialog.

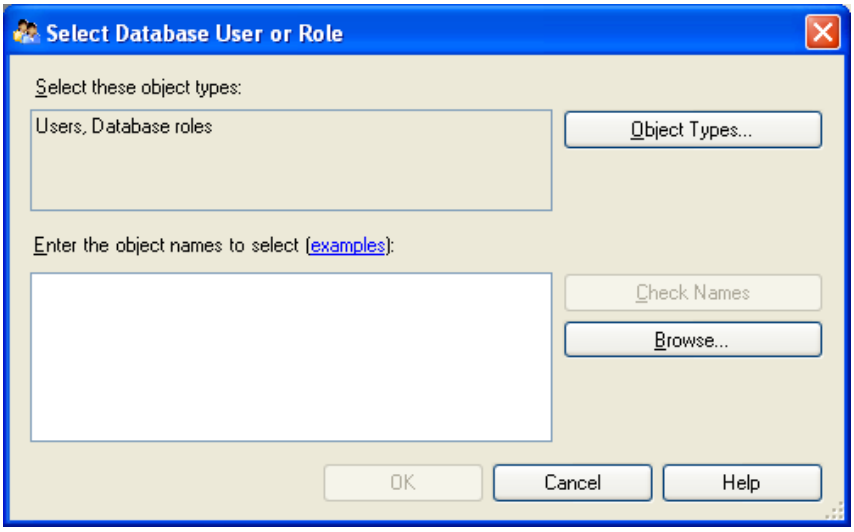


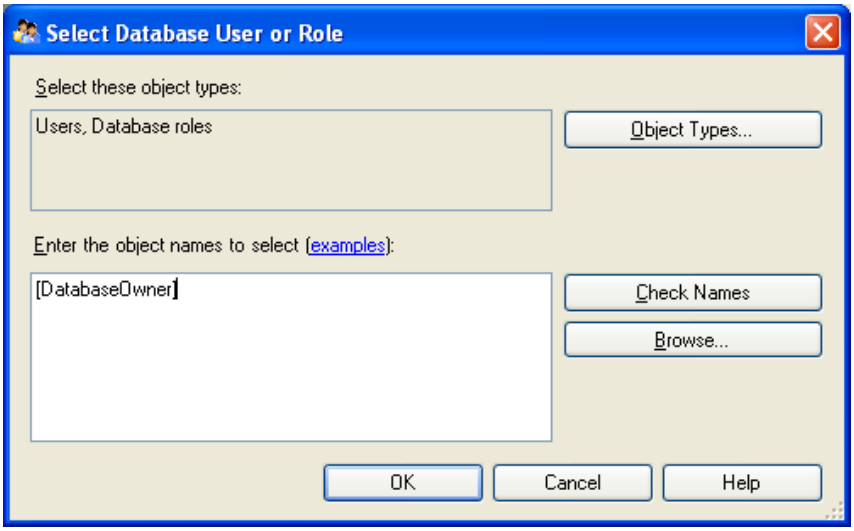


The following example demonstrates how to assign a database role to a database user, from the "Database Role Properties" dialog, in the SQL Server Enterprise Manager.




Database Role Properties - seer_project_admin_dbrole
Select a page
General
Securables
Extended Properties
Script
Help
Role name:
seer_project_admin_dbrole
Owner:
dbo
Schemas owned by this role:
Owned Schemas
db_accessadmin
dbo
db_securityadmin
db_owner
db_backupoperator
db_ddladmin
Members of this role:
Role Members
DatabaseOwner
seer_admin_dbrole
Add...
Remove
Connection
Server:
SUBVERSION
Connection:
SeerAdmin
View connection properties
Progress
Ready
OK
Cancel


Select Database User or Role
Select these object types:
Users, Database roles
Object Types...
Enter the object names to select (examples):
Check Names
Browse...
OK
Cancel
Help



7.3.4 Granting Explicit Table Permissions to Users

Alternatively, permissions can be granted explicitly to the database user created for each SEER application user other than “seer_admin_dbrole”, “seer_project_admin_dbrole” database roles. To insure that a SEER application user has all the table access permissions required by the SEER application, grant to each database user the same permissions granted to the “seer_project_admin_dbrole” database role.

8. ODBC Data Source Configuration

Usage by SEER Application

SEER applications access a SEER Database via ODBC. Therefore, each SEER application user must have an ODBC data source configured for each SEER Database the user will access.

ODBC security concerns: The ODBC connection strings are transmitted from the local machine to the database server through the organization’s private network or VPN. The connection strings are never transmitted through the internet or intranet using HTTP/HTTPS. With the exception of the SEER Browser, SEER products are not web-based applications vulnerable to HTTP/HTTPS transmissions.

8.1.1 DBMS Authentication Mode and Login Dialog

SEER application delegates all user authentication to the target DBMS, when attempting to connect to a SEER Database. The DBMS login dialog displayed to a SEER application user is dependent on the particular DBMS, as well as the Windows ODBC driver for that DBMS on the user’s machine.

8.1.1.1 SQL Server (and SQL Server Express)

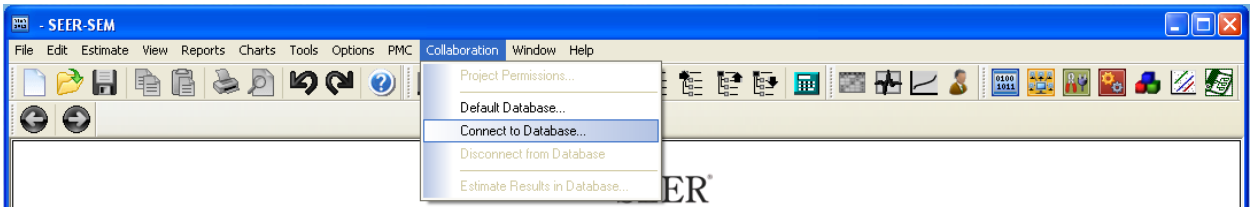
SQL Server (and SQL Server Express) supports two authentication modes: Windows network authentication and SQL Server authentication. The authentication mode(s) supported is a configuration property particular to each SQL Server (or SQL Server Express) instance. However, the authentication mode set in the ODBC data source configuration will be the default authentication mode used by the ODBC driver to connect to the corresponding database. For the best user experience, a user’s ODBC data source corresponding to a SEER Database should be configured with an authentication mode consistent with the authentication mode(s) configured for the target SQL Server (or SQL Server Express) instance. In addition, it should be consistent with the type of DBMS login assigned to that user; i.e. Windows network login and/or SQL Server login. For details on DBMS and database access, see the section, “Access Control”.

8.1.1.1.1 Windows Network Authentication

If a SEER application user's ODBC data source (corresponding to the target SEER Database) is configured for Windows network authentication, no login dialog will be displayed, when the user attempts to connect to the database. The ODBC driver will attempt to connect to the database using a "trusted" connection. In order for the connection to succeed, the user's Windows network login must have been granted access to the target SQL Server (or SQL Server Express) instance, as well as access to the target database on it. For details on DBMS and database access, see the section, "Access Control".

8.1.1.1.2 SQL Server Authentication

If a SEER application user's ODBC data source (corresponding to the target SEER Database) is configured for SQL Server authentication, a SQL Server login dialog will be displayed, when the user attempts to connect to the database. The user will have the option to enter a SQL Server login ID and password, or to connect using a "trusted" connection. If the user chooses to connect using a "trusted" connection, Windows network authentication is used. If the user enters a SQL Server login ID and password, SQL Server authentication is used. In order for the connection to succeed using SQL Server authentication, the target SQL Server (or SQL Server Express) instance must have been configured for SQL Server (or mixed-mode) authentication. In addition, the SQL Server login entered by the user must exist on the target SQL Server (or SQL Server Express) instance, as well as have access, via an associated database user name, to the target database on it. For details on DBMS and database access, see the section, "Access Control".



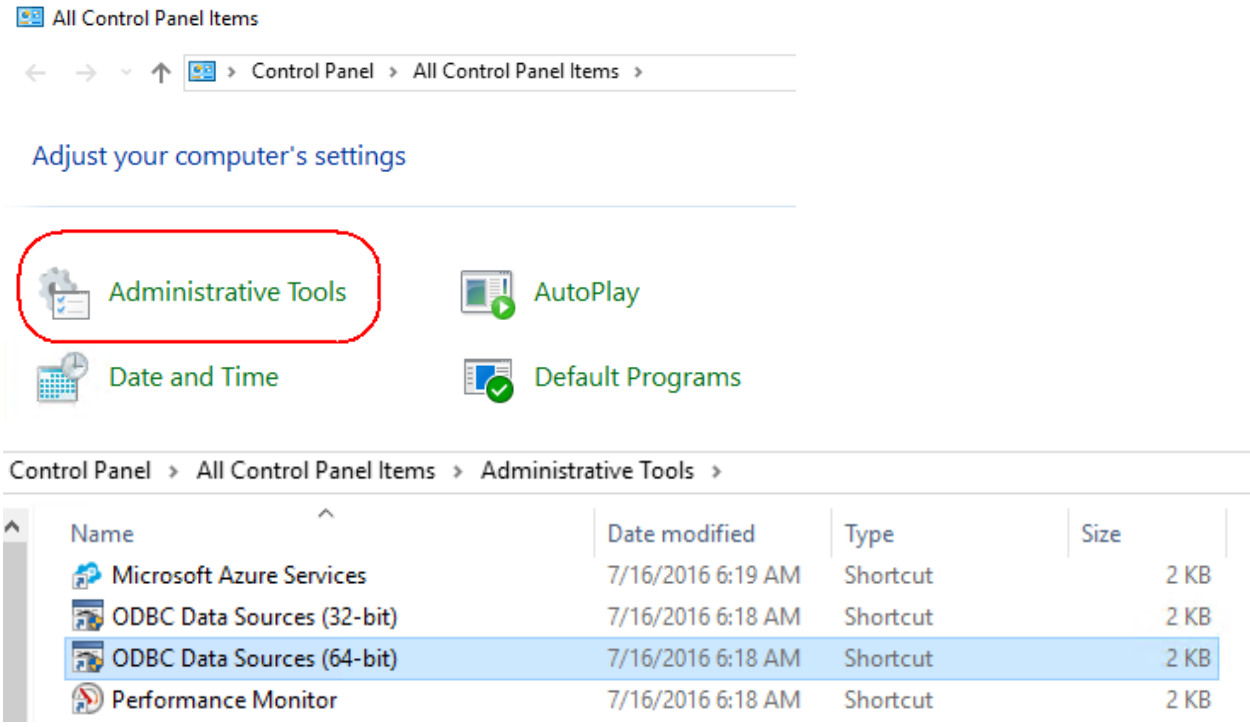
General Procedure

This section describes the general procedure for creating and configuring an ODBC data source to access a database (via ODBC). The procedure presented is for a minimal ODBC data source configuration. The information is intended for systems administrators who are new to ODBC data source configuration, and for users who wish to configure their own ODBC data sources. Beginners can also use the *SEER Database Set-Up Utility* to configure a basic ODBC data source corresponding to a SEER Database. For details on ODBC data source configuration, please refer to the Windows online help and other documentation from Microsoft.

To set up an ODBC data source corresponding to a database, follow the procedure described in this section. Note that the ODBC-driver-specific details presented are for Microsoft SQL Server (or SQL Server Express).

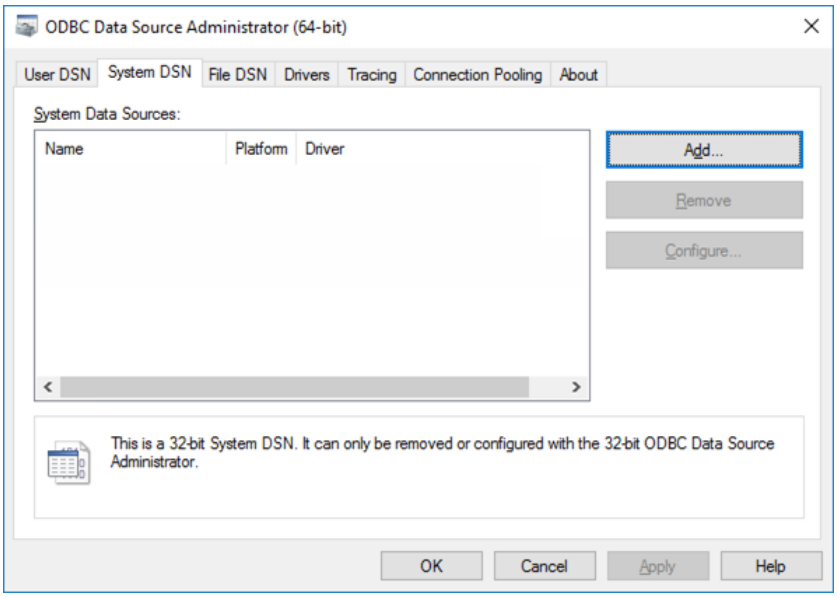
STEP 1. Open the ODBC Data Source Administrator dialog, as follows.

a. Open the Control Panel.
b. From the Control Panel, open “Administrative Tools”.
c. From “Administrative Tools”, open “ODBC Data Sources (64-bit)”.



STEP 2. In the “ODBC Data Source Administrator” dialog, select the “System DSN” or “User DSN” tab. To configure an ODBC data source shared by all users on the system, select the “System DSN” tab. To configure an ODBC data source visible only to the user who created it (i.e. yourself), select the “User DSN” tab. Note that, to create a system DSN, one must be logged into Windows as “Administrator”, a user in the “Administrators” group, or a user with administrative privileges.

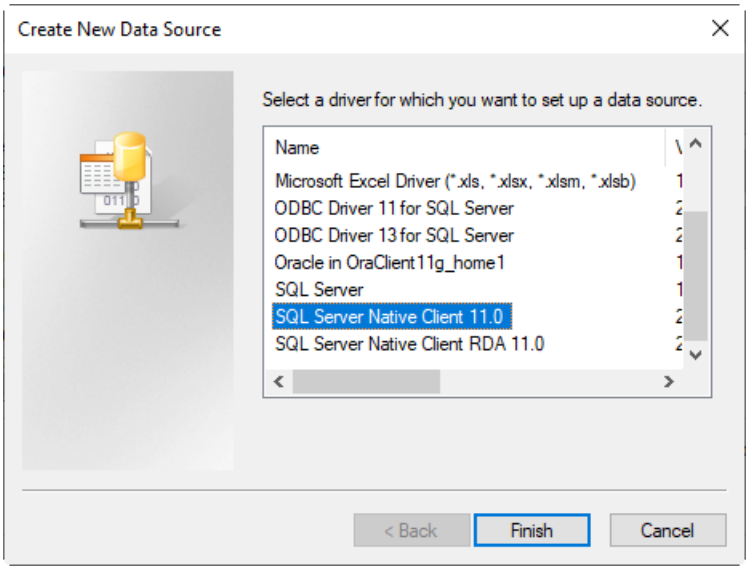
STEP 3. In the “System DSN” or “User DSN” tab of the “ODBC Data Source Administrator” dialog, click on “Add”.



STEP 4. In the "Create New Data Source" dialog, do the following.

a. Scroll down the list of drivers and look for an item named "SQL Server Native Client".
b. Select the item named "SQL Server Native Client".
c. Click on "Finish".
d. Observe that a new dialog titled "Create a New Data Source to SQL Server" appears.

NOTE: Additional ODBC Drivers are supported: SQL Server and ODBC Driver for SQL Server

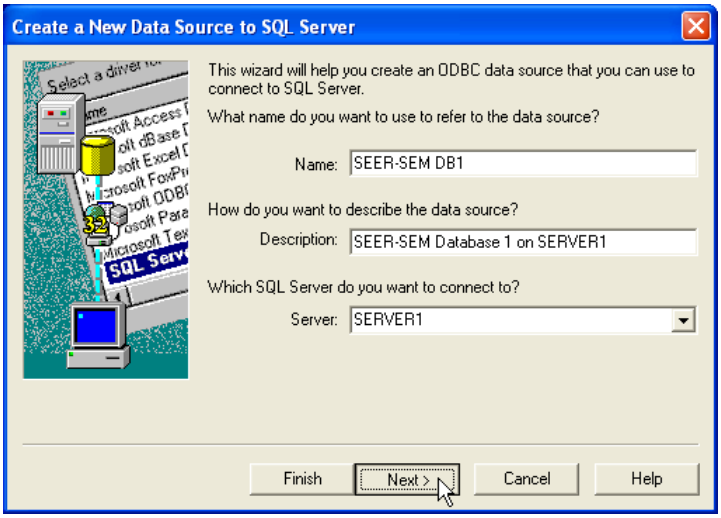


STEP 5. In the first screen of the "Create a New Data Source to SQL Server" dialog, do the following.

a. In the "Name" field type a name by which the user(s) will refer to this ODBC data source and, in turn, the target database. This name is referred to as the data source name (DSN).
b. In the "Description" field, optionally type a description for this ODBC data source.
c. In the "Server" field, select or type the server name of the target SQL Server (or SQL Server Express) instance; or type "(local)" for the local machine. For a named instance of SQL Server (or SQL Server Express), append "\<instance name>" to the server name, where <instance

name> is the name of the SQL Server (or SQL Server Express) instance; e.g. “(local)\SQLEXPRESS_SEERDB”.

d. Click on “Next”.



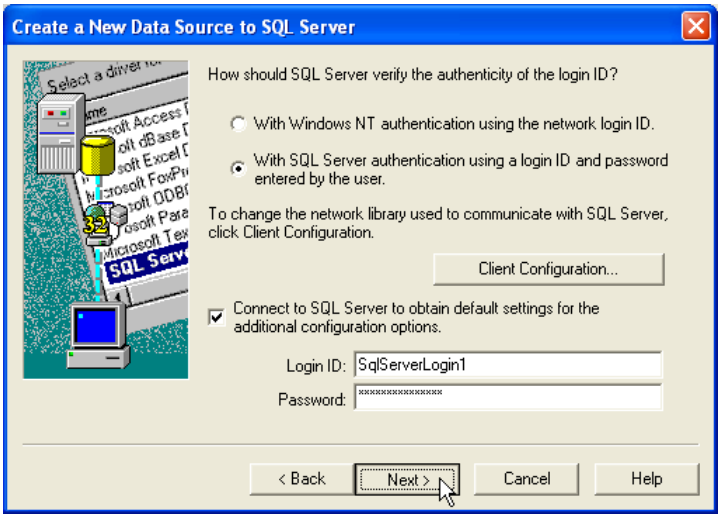
STEP 6. In the second screen of the “Create a New Data Source to SQL Server” dialog, do the following.

a. To access the target SQL Server (or SQL Server Express) with Windows network authentication, select the option, “With Windows NT authentication ...”. To access the target SQL Server (or SQL Server Express) with SQL Server authentication, select the option, “With SQL Server authentication ...”.

b. Verify that the option “Connect to SQL Server to obtain default settings ...” is selected.

c. For SQL Server authentication, enter the SQL Server login and password to use when connecting to the target SQL Server (or SQL Server Express). Note that this SQL Server login and password is used to connect to SQL Server to obtain default settings during the data source configuration. This SQL Server login is will also be displayed as the default login, whenever the user(s) try to connect to the target SQL Server (or SQL Server Express) via this ODBC data source.

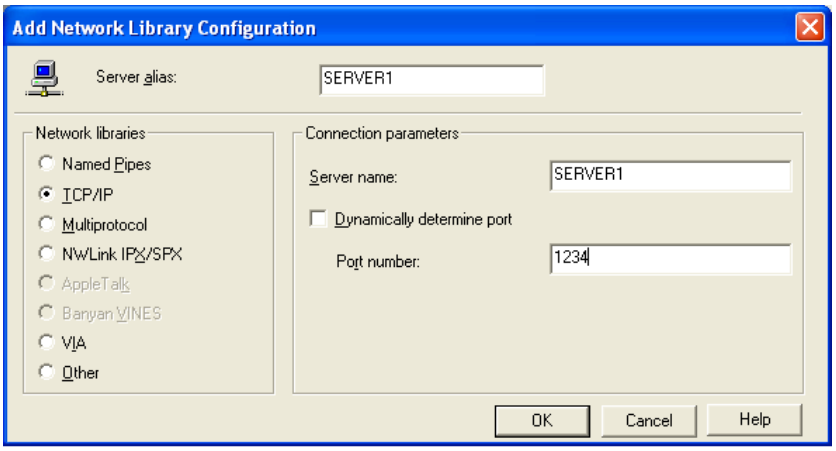
d. Click on “Next”.



STEP 7. This is an optional step is only required if you have a specific TCP/IP port number if desired for extra network security.

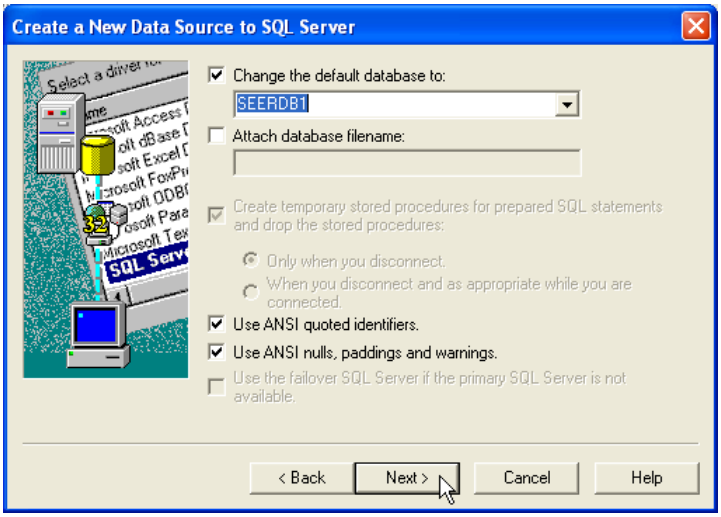
In the same Create a new Data Source to SQL Server dialog, click on “Client Configuration” button.

a. A new dialog called Add Network Library Configuration will open up.
b. In the Add Network Library Configuration dialog (below) uncheck the Dynamically determine port box and enter the port number value below. In my example, I used “1234” as a port number.
c. Click on “OK”.



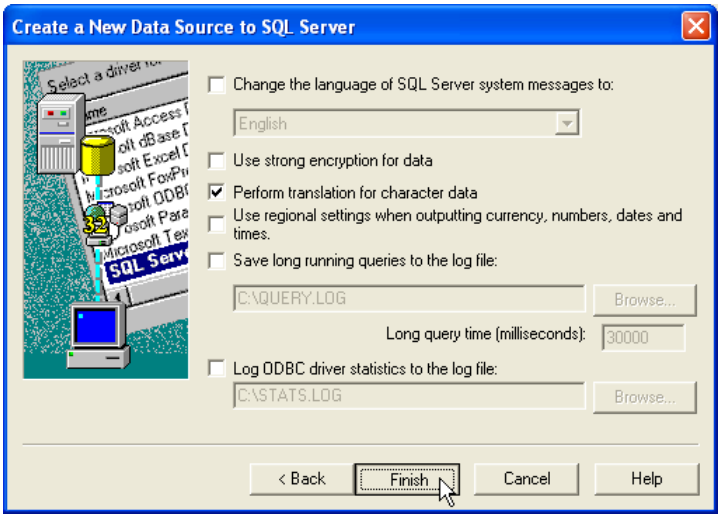
STEP 8. In the third screen of the “Create a New Data Source to SQL Server” dialog, do the following.

a. Select the option, “Change the default database to”.
b. From the drop-down list under the option, “Change the default database to”, select the item corresponding to the name of the target database, (on the target SQL Server or SQL Server Express instance).
c. Click on “Next”.



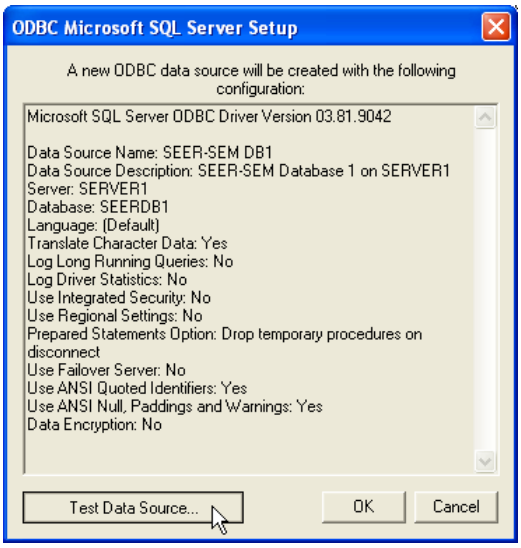
STEP 9. In the fourth and last screen of the “Create a New Data Source to SQL Server” dialog, do the following.

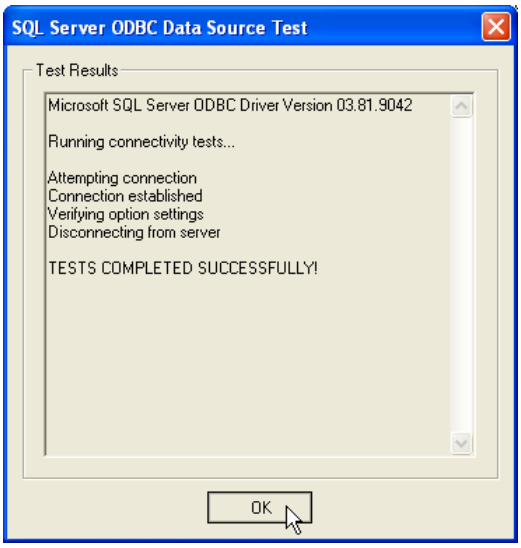
a. Accept all defaults.
b. Click on “Finish”.
c. Observe that a new dialog titled “ODBC Microsoft SQL Server Setup” appears.



STEP 10. Test the configuration of the new ODBC data source, as follows.

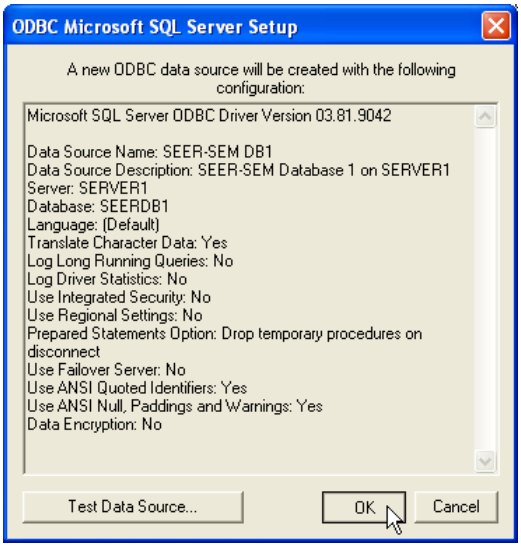
a. In the "ODBC Microsoft SQL Server Setup" dialog, click on "Test Data Source...".
b. In the "SQL Server ODBC Data Source Test" dialog, verify that the test results show "TESTS COMPLETED SUCCESSFULLY".
c. In the "SQL Server ODBC Data Source Test" dialog, click on "OK".

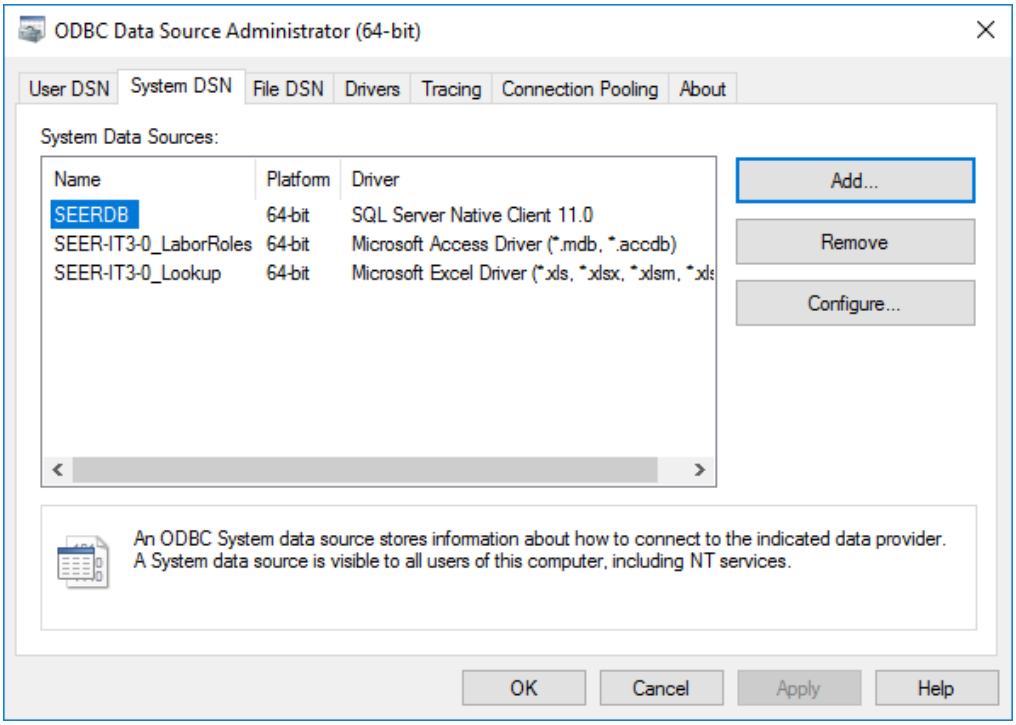




STEP 11. Complete the configuration of the new ODBC data source, as follows.

a. In the "ODBC Microsoft SQL Server Setup" dialog, click on "OK".
b. Optionally, in the "ODBC Data Source Administrator" dialog, scroll down the list of data sources to verify that your new data source has been added.
c. In the "ODBC Data Source Administrator" dialog, click on "OK".





STEP 12. Close "Administrative Tools".

9. Database Backups

Regularly scheduled backups of SEER Databases containing critical data are strongly recommended.

Database Transactions and Rollbacks

The current release of SEER applications does not support database transactions and rollbacks. Therefore, backups of SEER Databases are particularly important for the current release of SEER application.

10. Data Recovery

General Data Corruption

If a general data corruption occurs in a SEER Database, data should be recovered from the most current database backup.

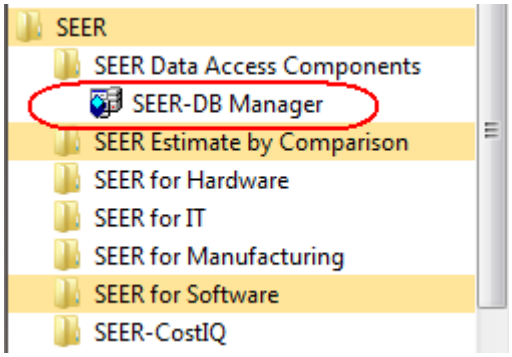
Incomplete Project Revision Data

In the event data for a SEER application project revision is partially saved to the database, due to a network failure or other system-related failure, please contact technical support at Galorath Incorporated.

11. SEER Enterprise Database Manager

SEER Enterprise Database Manager is a SEER collaboration tool designed to create user accounts and access privileges, assign a project owner and specific access permissions for SEER projects saved to SEER-DB. It can also be used to setup and configure database custom fields.

SEER Enterprise Database Manager installs separately from SEER Applications and SEER Database. To install, run setup.exe from the SEER Enterprise Database Manager folder of your SEER DB Setup package. Once installed, it can be launched from the start menu under the SEER\SEER Data Access Components menu item. Or you may run **SEER.DAC.Tools.EnterpriseManager.exe** directly from the installation folder C:\Program Files \SEER\SEER-DB Manager,



11.1 Managing Database Users

"Seer_admin_dbrole" database role has the privileges of both "seer_user_admin_dbrole" and "seer_project_admin_dbrole". "Seer_admin_dbrole" database role user can set access permissions to SEER Database for other users initially added by a database administrator, change project owners and set project specific permissions. Only "Seer_admin_dbrole" database role user can assign General User Permissions to a specific type of project data (i.e. SEER for Software).

Users with "seer_admin_dbrole" and "seer_user_admin_dbrole" database role can run SEER Enterprise Database Manager to define the users initially added by a database administrator who have access to the target SEER Database.

Users with "seer_admin_dbrole" and "seer_project_admin_dbrole" database roles can run SEER Enterprise Database Manager to assign Project Owners and Project Specific Permissions.

Users other than "seer_admin_dbrole" and "seer_project_admin_dbrole" database role users can assign project specific permissions to other users for the projects they own but cannot modify any other settings.

Once the SEER Database has been installed and the database administrator has created the appropriate DB logins and user accounts (as described in section 7), an administrator with the database role of "seer_admin_dbrole" or "seer_user_admin_dbrole" can proceed to create SEER Users that correspond to these DB users (described in section 11.2.2 below).

After SEER User is mapped to DB user, "seer_admin_dbrole" database role user can provide the user with access to application specific projects and their general permission profile under General User Permission.

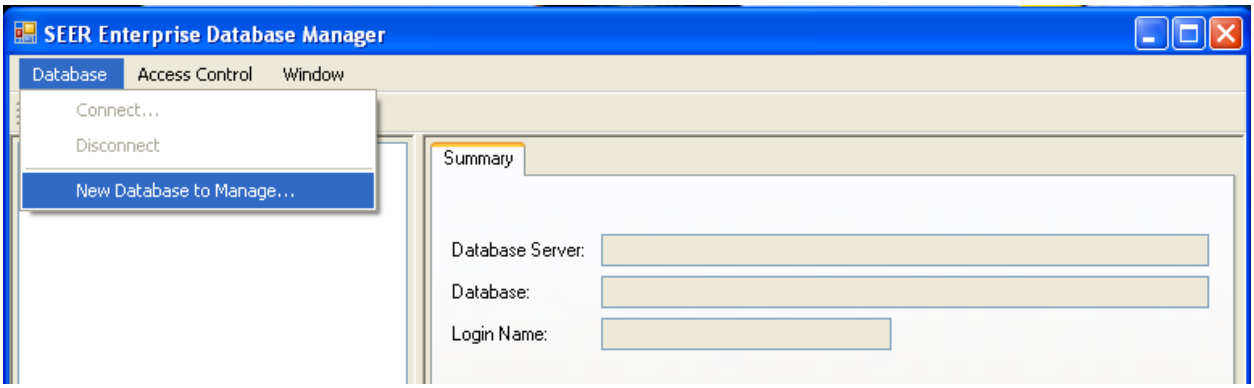
By creating a SEER User that maps to a particular database login and adding the user to "Users having explicit permissions" under General User Permissions for a specific type of project data, it grants that user explicit permissions (see section 11.2.3). Whereas database users operate within the context of the database (tables,

queries, etc.), SEER Users operate within the context of the collaboration features (locking projects, saving projects, etc).

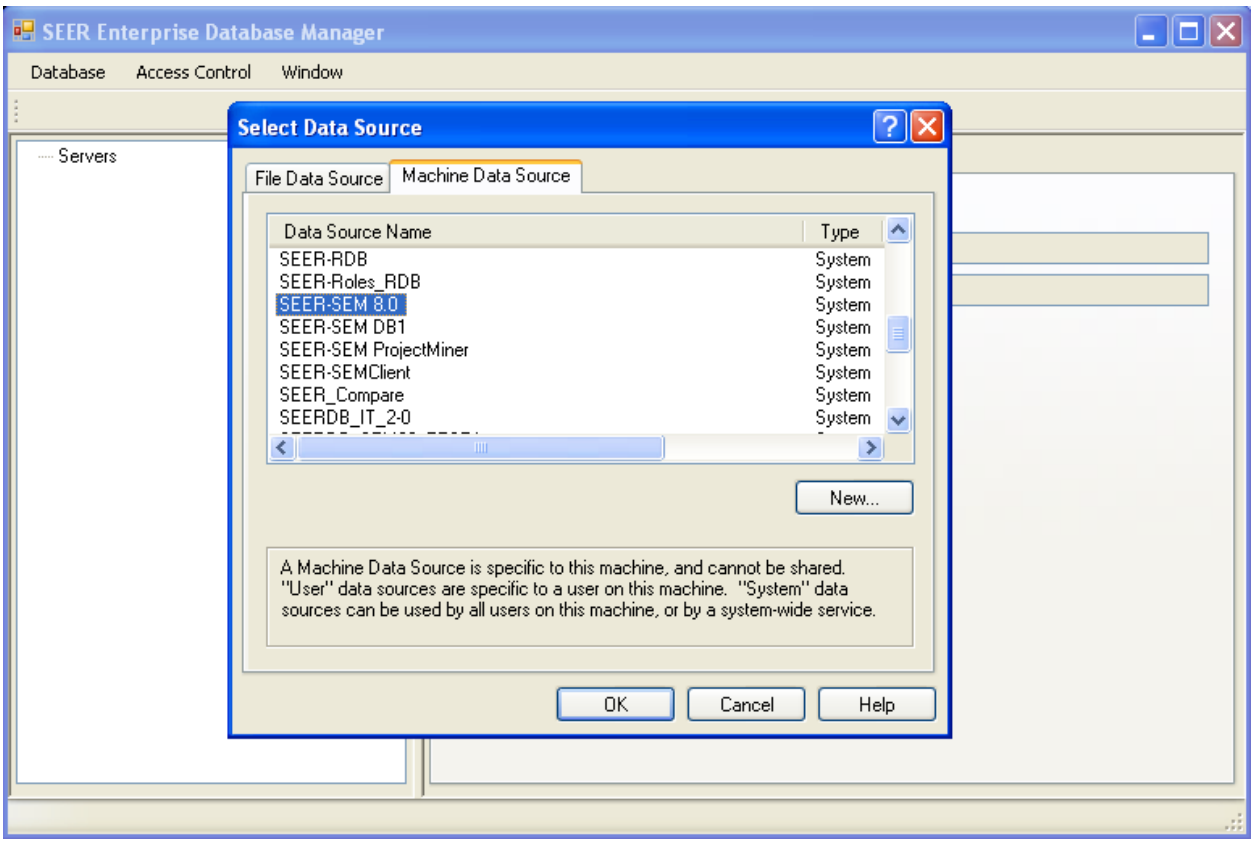
Note: database roles cannot be assigned using SEER Enterprise Database Manager; DBMS logins and database users need to be created first and assigned manually by database administrator once a new SEER Database is created.

11.1.1 Connecting to a New Database to Manage

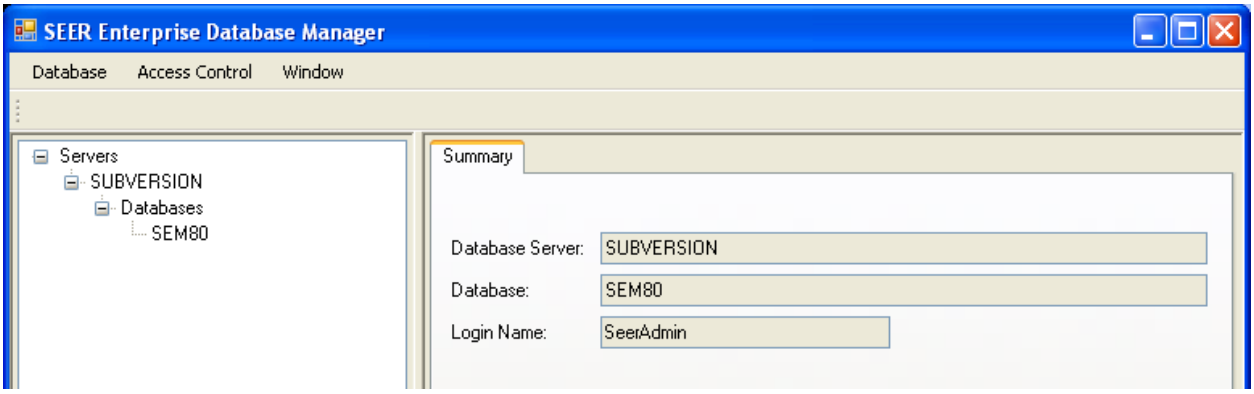
Select the menu command, “Database” → “New Database to Manage”.



In Select Data Source dialog window, activate Machine Data Source tab and select DSN for the database to connect to from the existing DSNs.

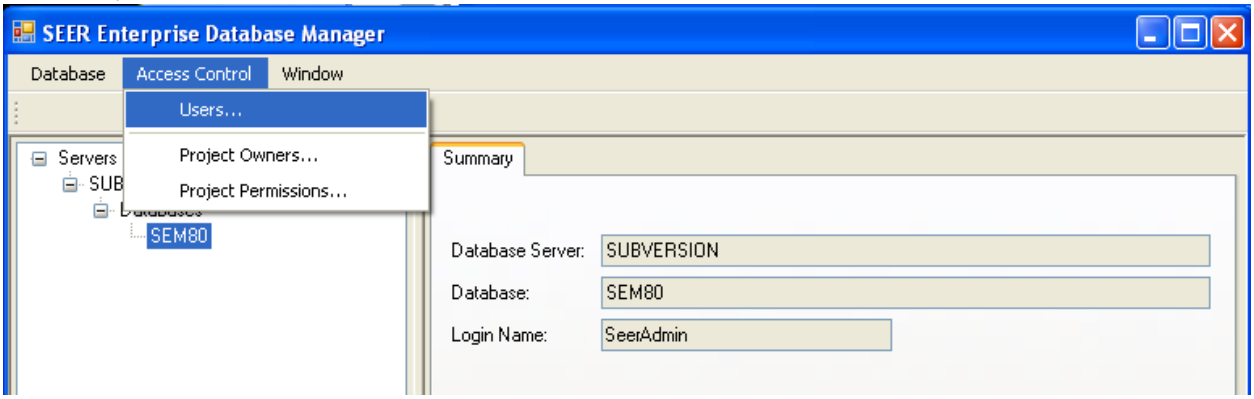


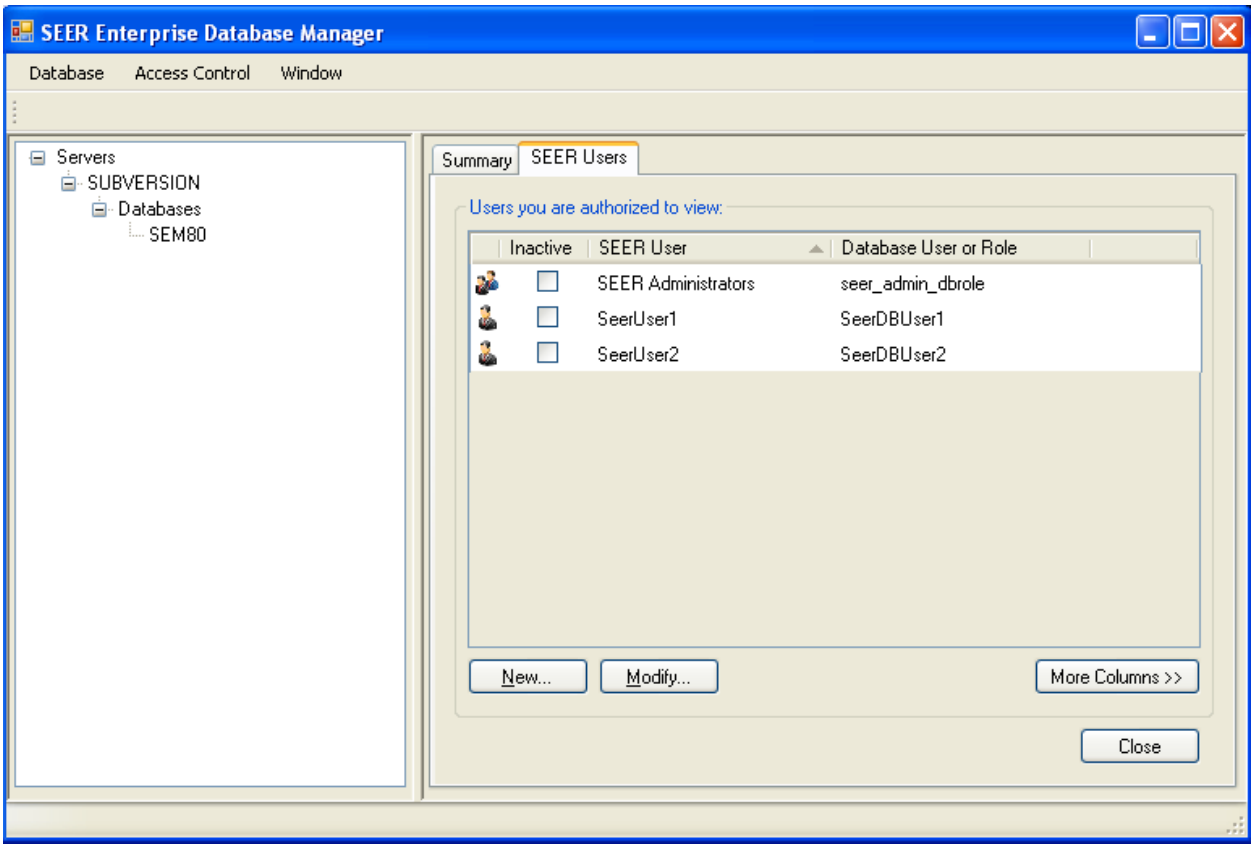
Once the connection is established, the database will be listed under Servers tree.



11.1.2 Managing SEER Users

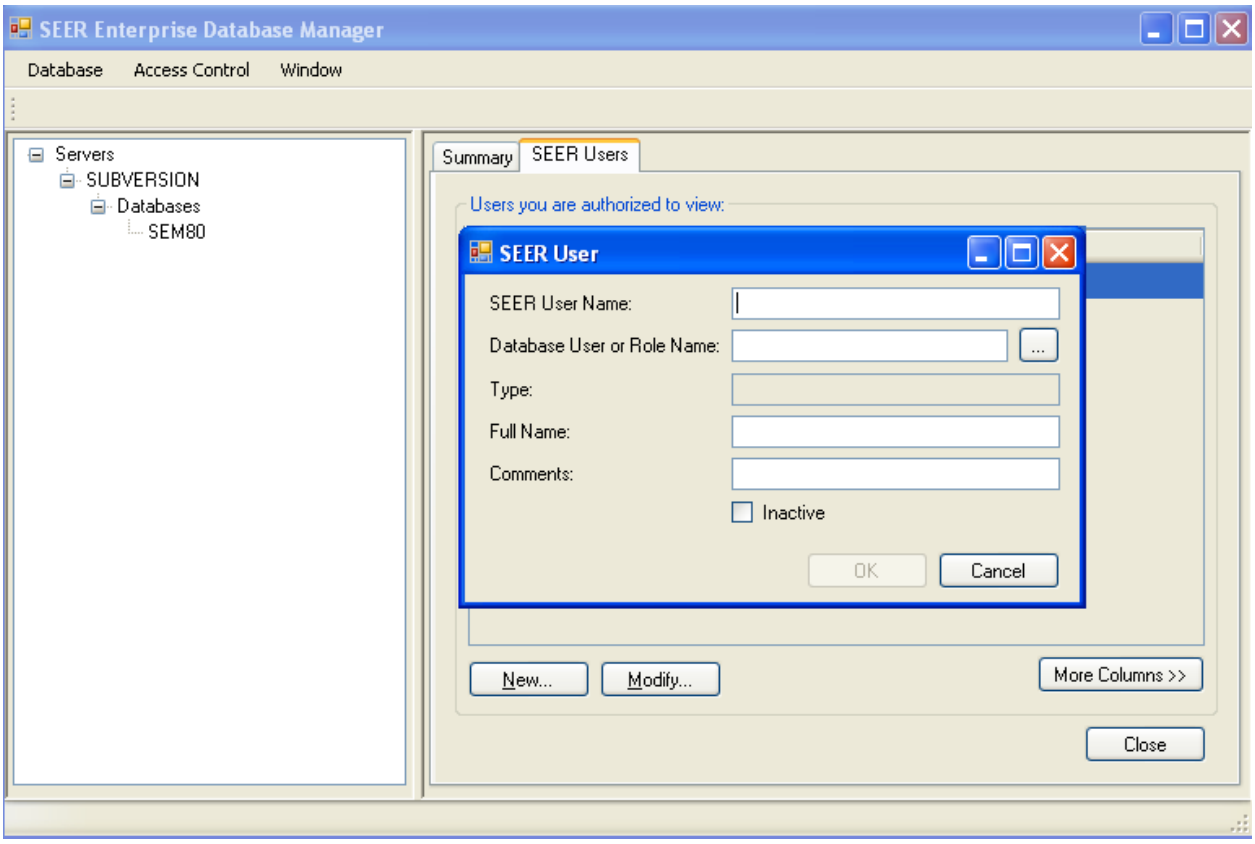
Logged in as “seer_admin_dbrole” or “seer_user_admin_dbrole” database role user, select the menu command, “Access Control” → “Users”.



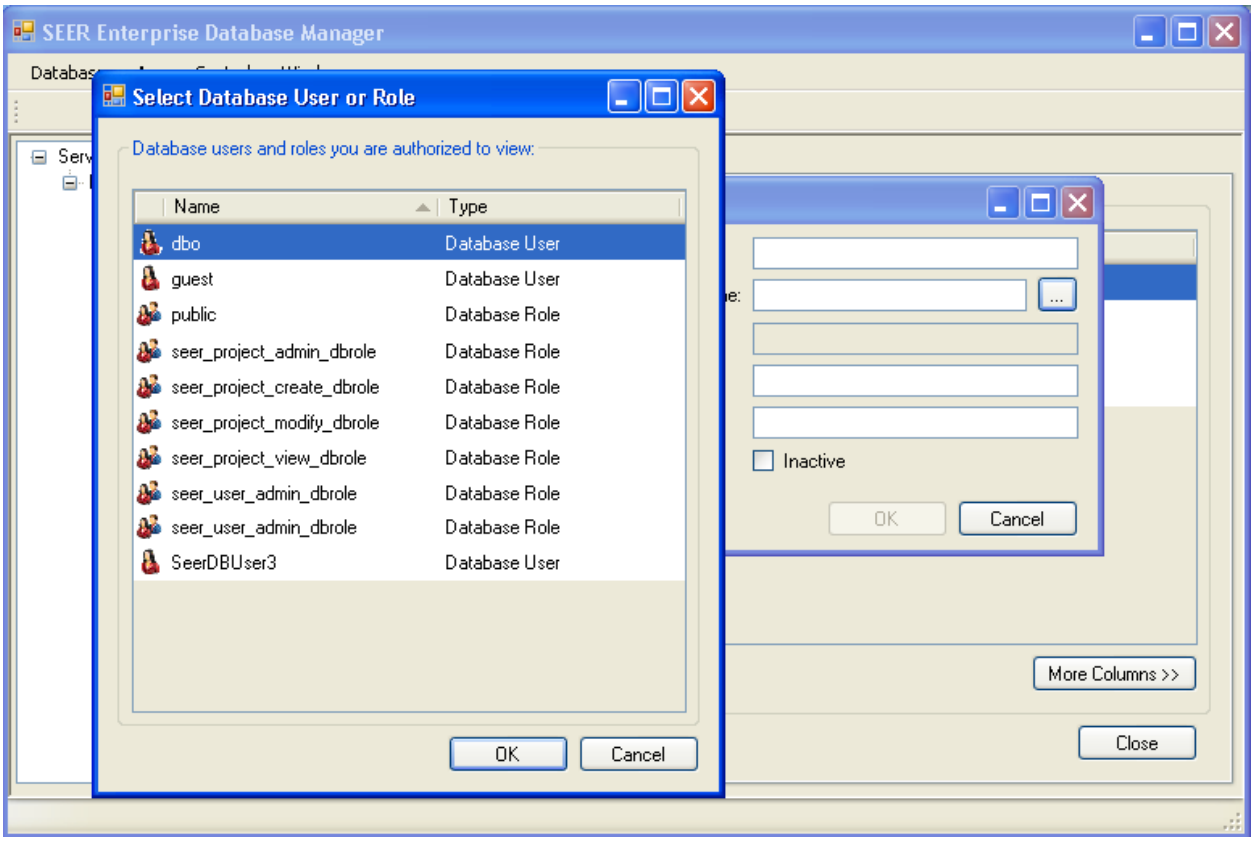


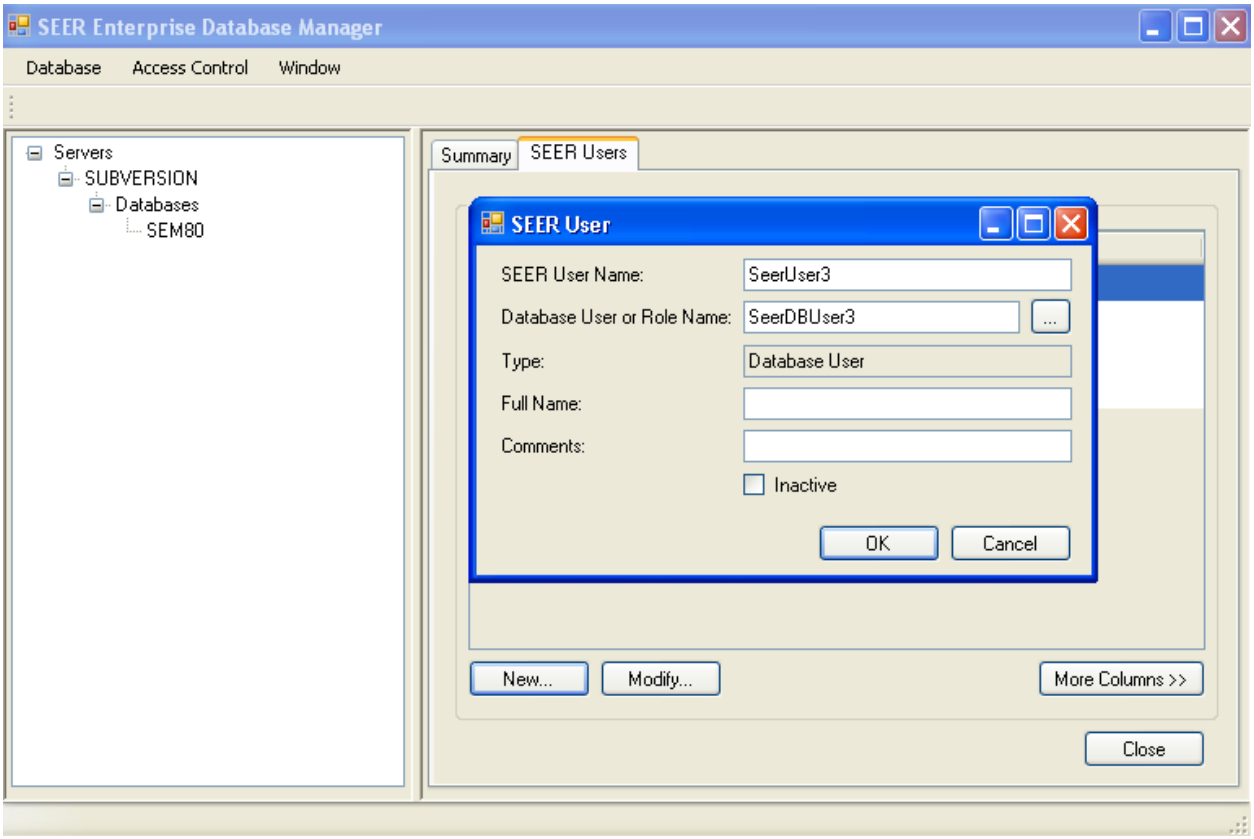
11.1.2.1 Adding a SEER User

Click New button on Users tab to invoke SEER User dialog.



From SEER User dialog click on Browse button, then select the user from the list of users and roles in the database administrator authorized list. Highlight the selection and click OK. SEER User Name is automatically populated on Database User selection.


SEER Enterprise Database Manager
Select Database User or Role
Database users and roles you are authorized to view:
Name
Type
dbo
Database User
guest
Database User
public
Database Role
seer_project_admin_dbrole
Database Role
seer_project_create_dbrole
Database Role
seer_project_modify_dbrole
Database Role
seer_project_view_dbrole
Database Role
seer_user_admin_dbrole
Database Role
seer_user_admin_dbrole
Database Role
SeerDBUser3
Database User
OK
Cancel
Inactive
OK
Cancel
More Columns >>
Close



11.1.2.2 Inactivating a SEER User

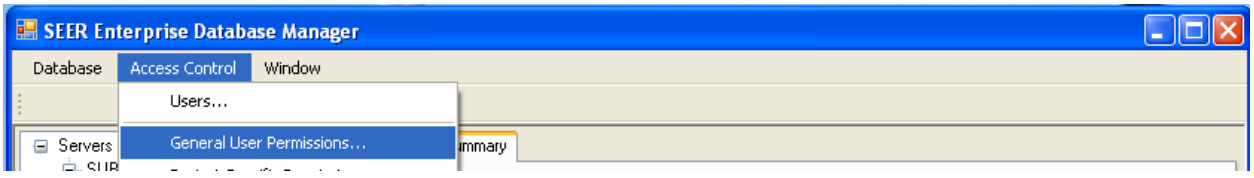
Highlight the SEER User in the "Users you are authorized to view" list on SEER Users tab, click Modify button, and then check Inactivate box.

11.1.2.3 Activating a SEER User

To activate a previously inactivated user, highlight the SEER User in the "Users you are authorized to view" list on SEER Users tab, click Modify button, and then uncheck Inactivate box.

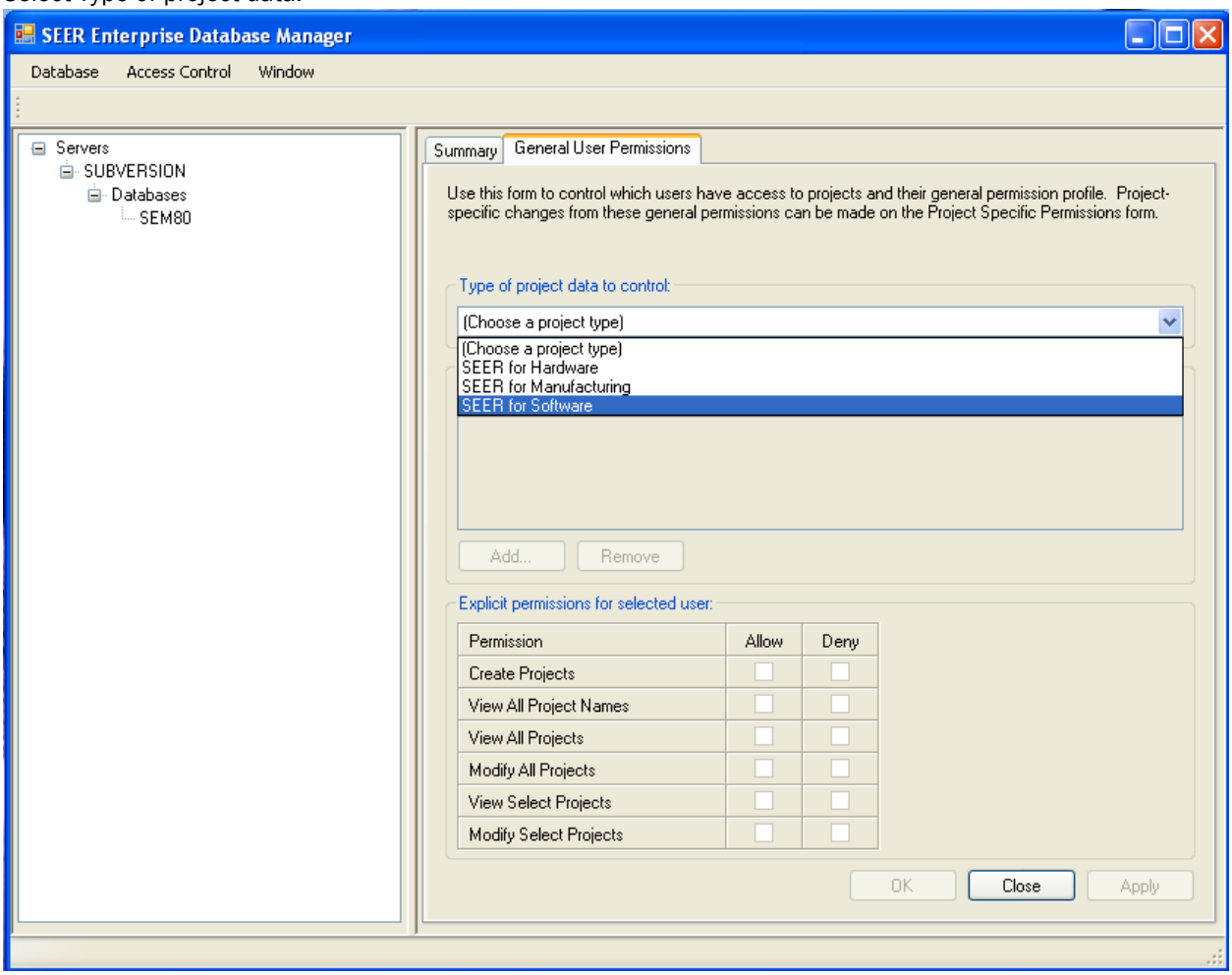
11.1.3 Setting General User Permissions

"Seer_admin_dbrole" database user can assign general permission profile and explicit permissions for accessing specific types of projects per user. Logged in as "seer_admin_dbrole" database role user, select the menu command "Access Control" → "General User Permissions".

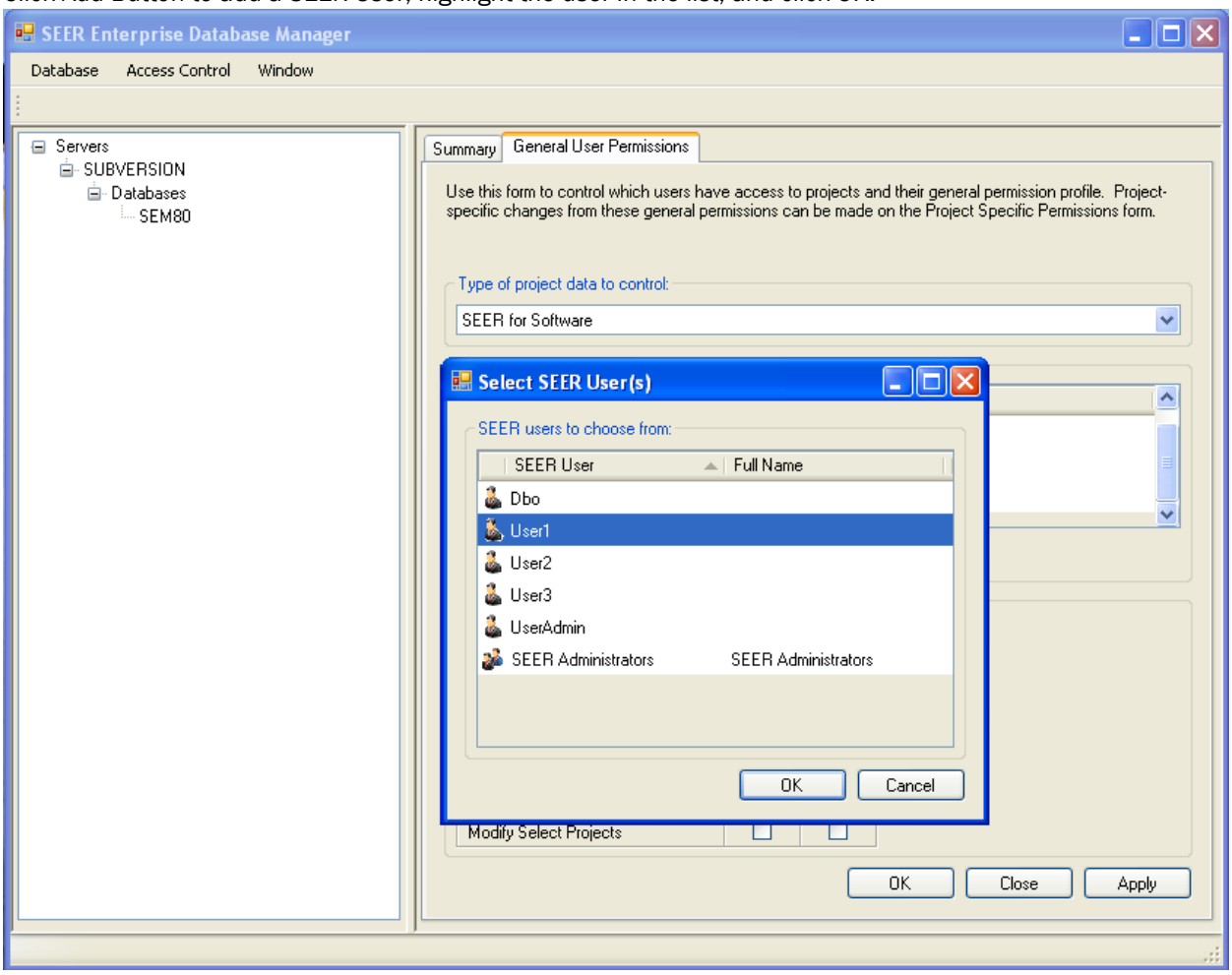


11.1.3.1 Setting Access to a Specific Type of Projects for a SEER User

Select Type of project data.

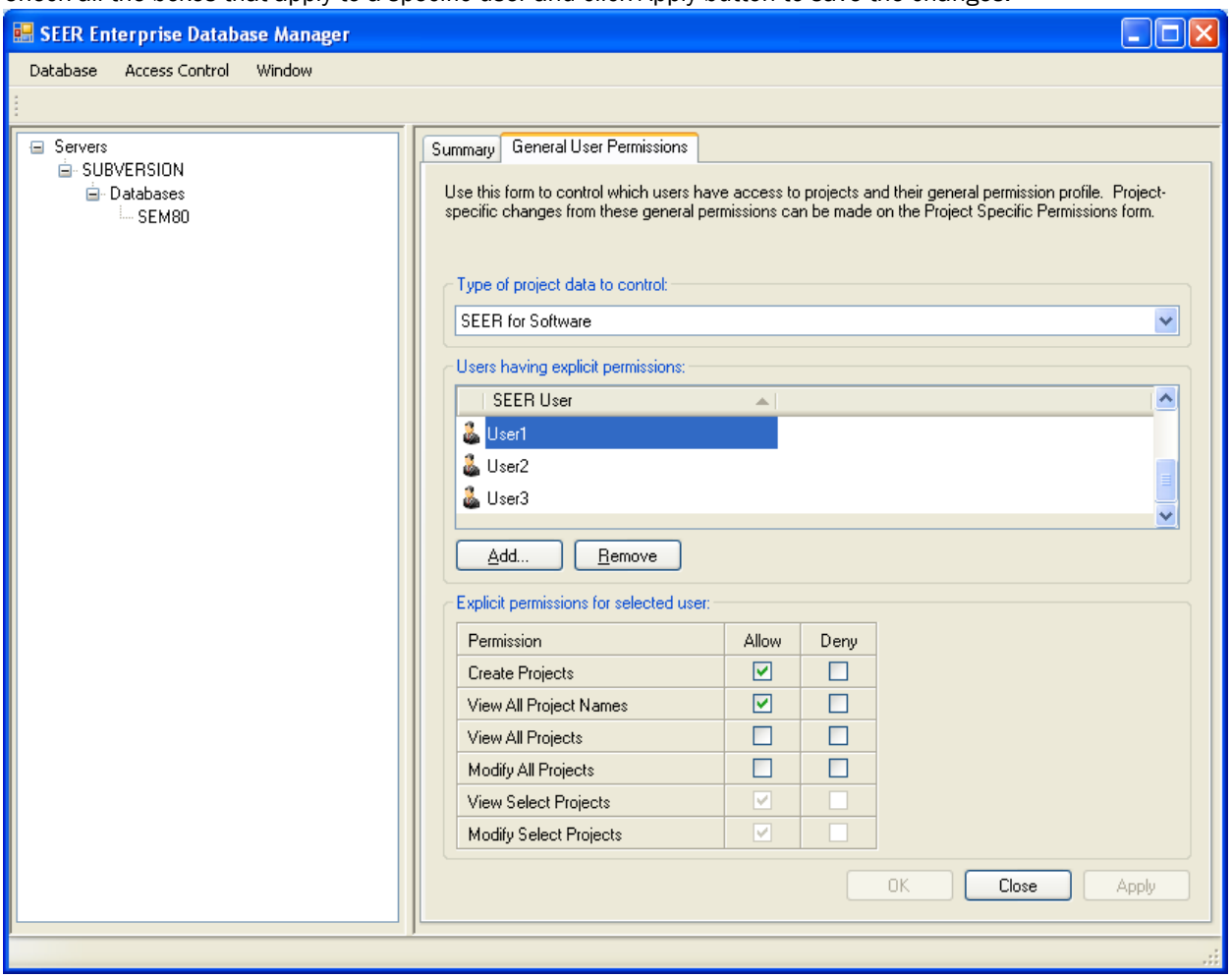


Click Add Button to add a SEER User, highlight the user in the list, and click OK.



11.1.3.2 Setting Explicit Permissions for Selected User

Check all the boxes that apply to a specific user and click Apply button to save the changes.



Create Projects	Permission to create projects, view and modify only the specific user's created project.
View All Project Names	Permission to see the list of all projects saved to SEER-DB for the type of project data.
View All Projects	Permission to view all projects saved to SEER-DB for the type of all project data.
Modify All Projects	Permission to view and modify all projects saved to SEER-DB for the type of all project data.
View Selected Projects	Permission to view only selected projects for which View permission is set to Allow under the Project Specific Permission.
Modify Select Projects	Permission to view and modify only selected projects for which Modify permission is set to Allow under the Project Specific Permission.

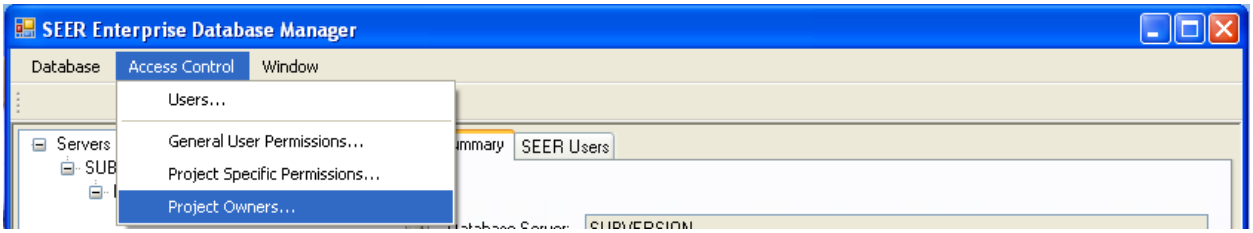
- In the context of explicit permissions (i.e. during administration), "No Permission" is as "Inherit Permission". In the context of effective permissions (i.e. when using SEER-SEM), "No Permission" is as "Not Allowed".
- When determining a user's effective permissions, a "Deny" setting on a permission, regardless of its position in the permission hierarchy and its position in the inheritance chain, always overrides any and all "Allow" settings in the permission hierarchy and inheritance chain.
- In order for a user to view a given project, the "View Select Projects" permission for the "SEER for Software" project type in General User Permission and the "View" permission for the given project in Project Specific Permission must both be granted.

- In order for a user to modify a given project, the “Modify Select Projects” permission for the “SEER for Software” project type in General User Permission and the “Modify” permission for the given project in Project Specific Permission must both be granted.
- Granting a user the “View All Projects” permission for the “SEER for Software” project type allows the user to view all SEER-SEM projects, with the exception of projects for which the “View” permission is set to “Deny” for that user.
- Granting a user the “Modify All Projects” permission for the “SEER for Software” project type allows the user to modify all SEER-SEM projects, with the exception of projects for which the “Modify” permission is set to “Deny” for that user.
- Setting a user’s “View Select Projects” permission for the “SEER for Software” project type to “No Permission” or “Deny” has the effect of NOT allowing the user to view ANY SEER-SEM projects. Note the distinction between this setting and a “No Permission” or “Deny” setting for the “View All Projects” permission, which means the user is NOT allowed to view ALL SEER-SEM projects.
- Setting a user’s “Modify Select Projects” permission for the “SEER for Software’ project type to “No Permission” or “Deny” has the effect of NOT allowing the user to modify ANY SEER-SEM projects. Note the distinction between this setting and a “No Permission” or “Deny” setting for the “Modify All Projects” permission, which means the user is NOT allowed to modify ALL SEER-SEM projects.

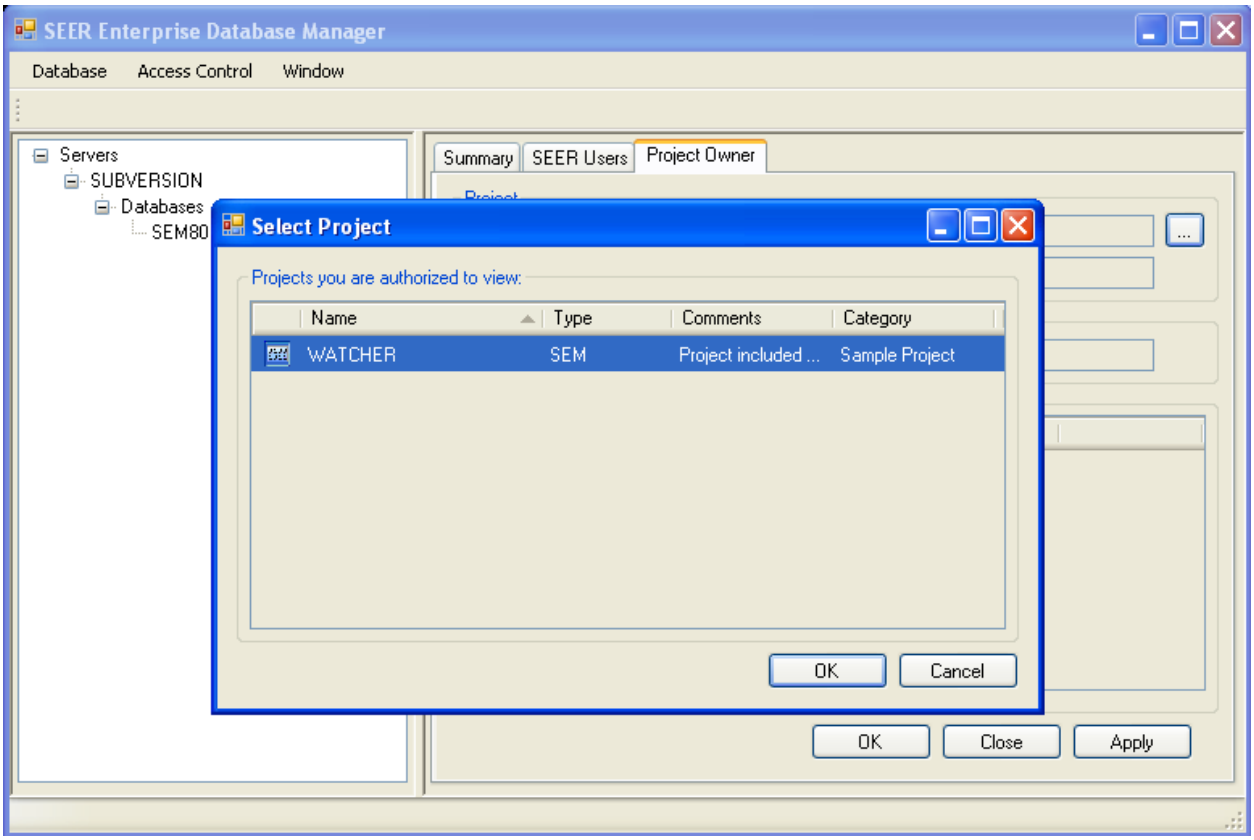
11.2 Managing Database Projects

11.2.1 Assigning or Changing Project Owner

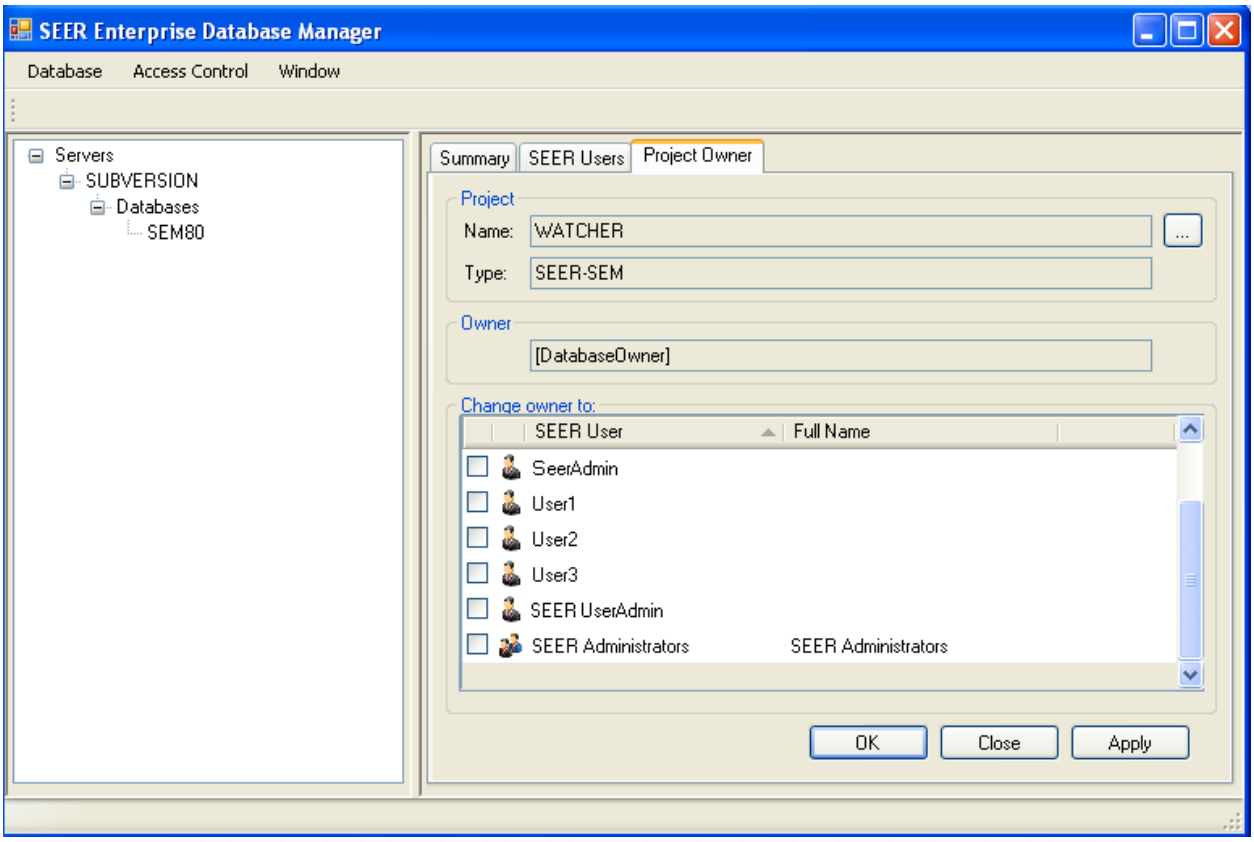
Logged in as “seer_admin_dbrole” or “seer_project_admin_dbrole” database role user or a current project owner, select the menu command, “Access Control” → “Project Owners”.



Click Browse button to select a SEER for Software project from the list of projects currently saved to SEER-DB.

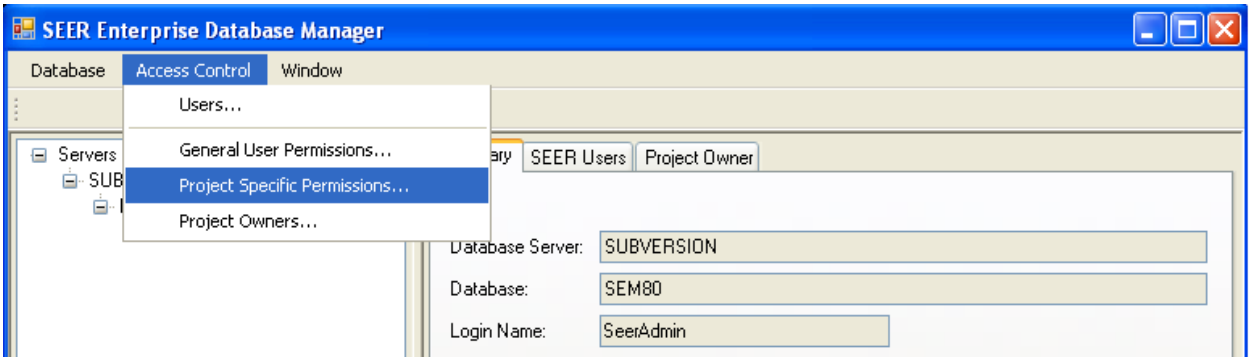


Once the project is selected, in the “Change owner to:” list on Project Owner tab select the SEER User who owns the project by checking the box, and then click Apply to save the changes.

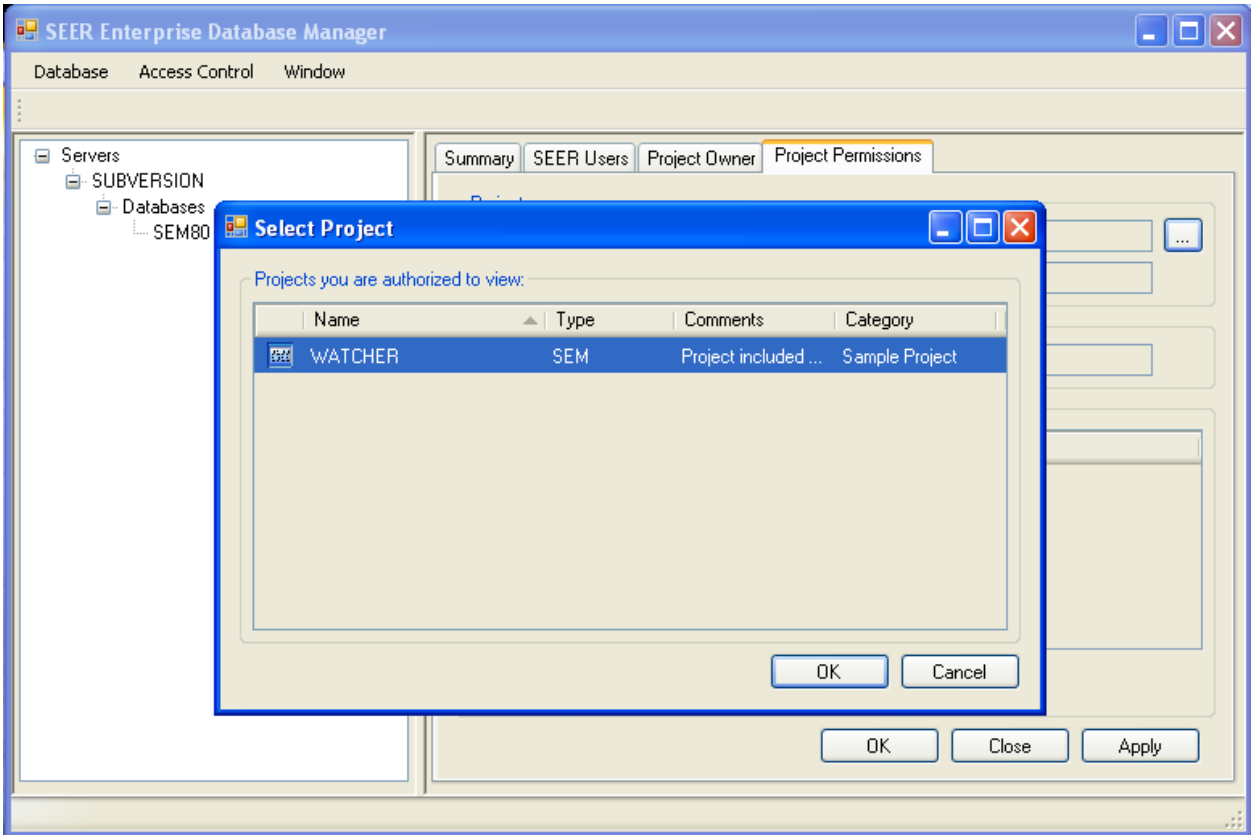


11.2.2 Adding or Removing Project Permissions

Logged in as “seer_admin_dbrole” or “seer_project_admin_dbrole” database role user or a current project owner, select the menu command, “Access Control” → “Project Specific Permissions”.

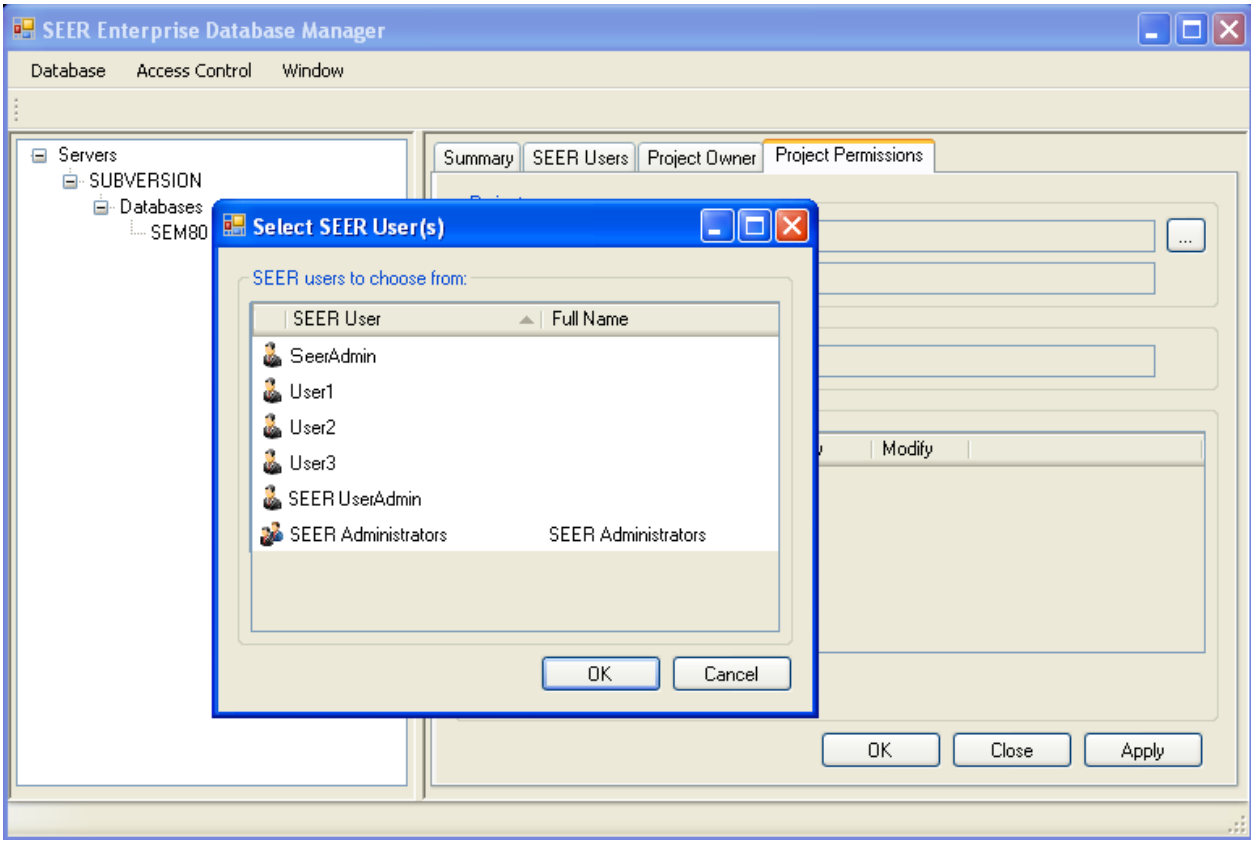


Click Browse button to select a SEER for Software project from the list of projects currently saved to SEER-DB.

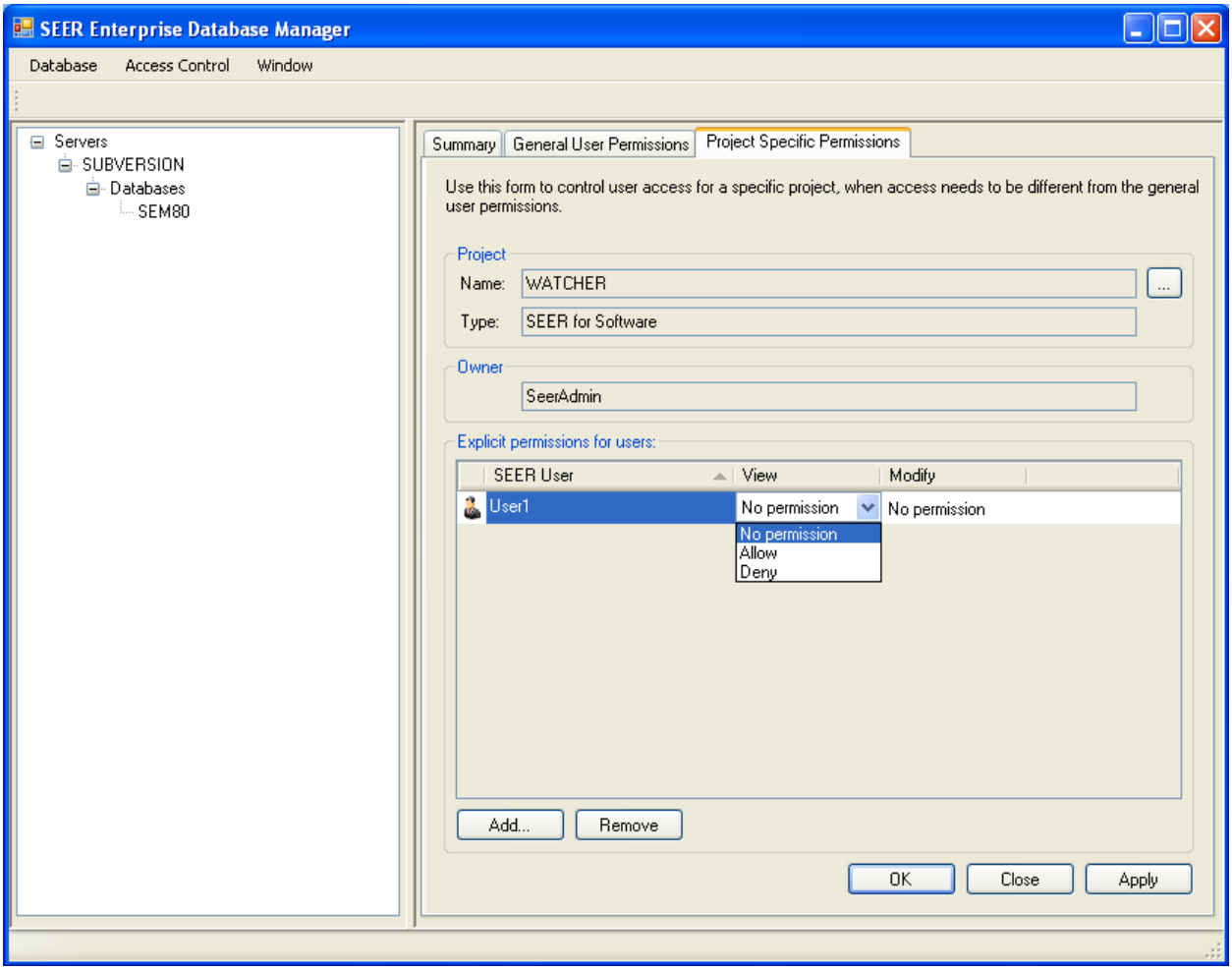


11.2.2.1 Adding a SEER User to Project Specific Permissions

Once the project is selected, click Add button on Project Specific Permissions tab and select a user from the "SEER Users to choose from" list by highlighting the user name and clicking OK.



In “Explicit permissions for users” table select permissions for View and Modify using the dropdown boxes.

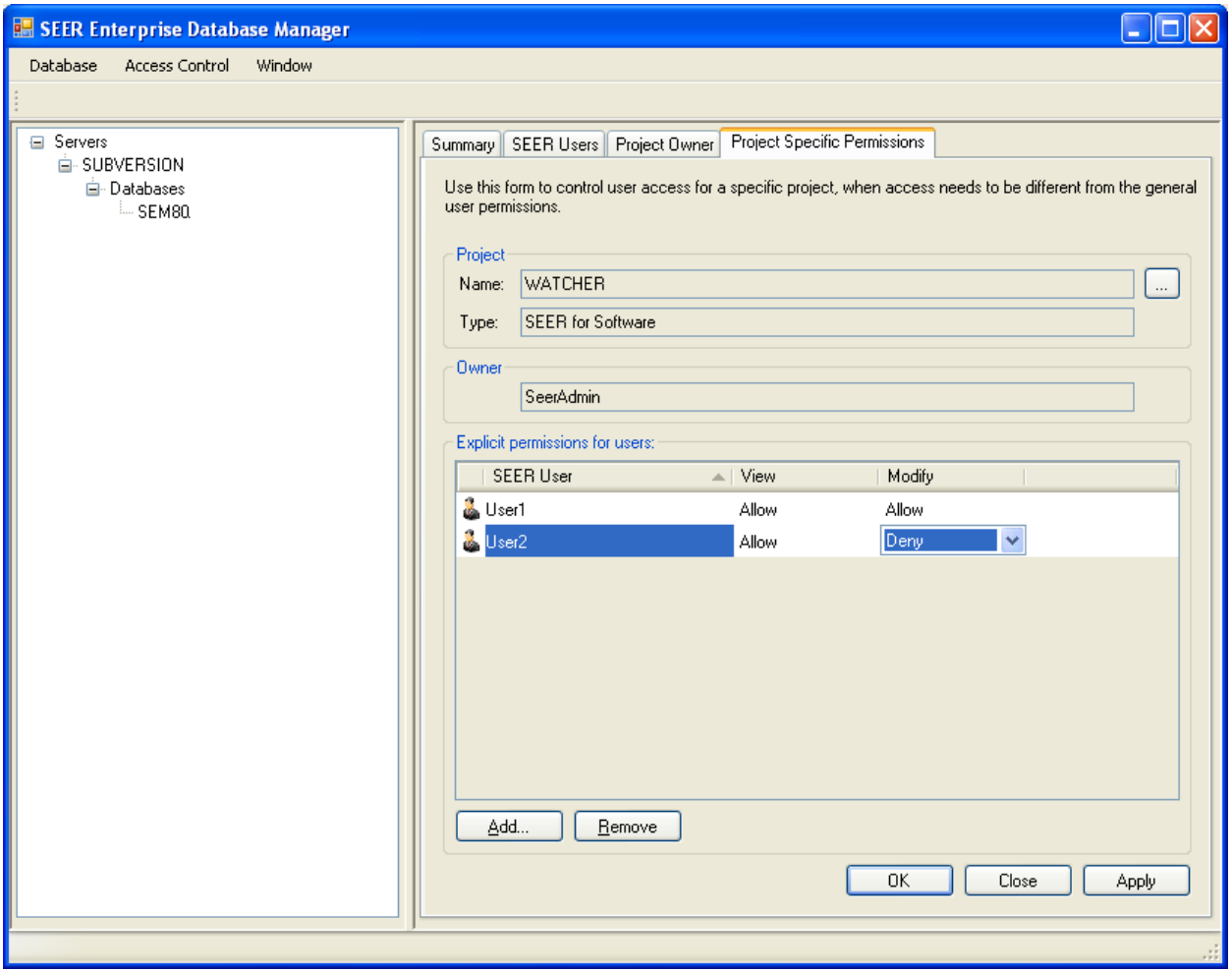


Setting Modify permission to Allow sets View permission to Allow by default.

All Project Specific Permissions accept 3 possible settings: Allow, No Permission, or Deny. "Allow" means explicitly grant the permission to the given user. "No Permission" means do not explicitly grant the permission to the given user, but the user can inherit the permission from Windows groups or database roles. "Deny" means explicitly deny the permission for the given user, regardless of the user's permission inherited from Windows groups or database roles.

In order for a user to view a given project, the "View Select Projects" permission for the "SEER for Software" project type in General User Permission and the "View" permission for the given project in Project Specific Permission must both be granted.

In order for a user to modify a given project, the "Modify Select Projects" permission for the "SEER for Software" project type in General User Permission and the "Modify" permission for the given project in Project Specific Permission must both be granted.

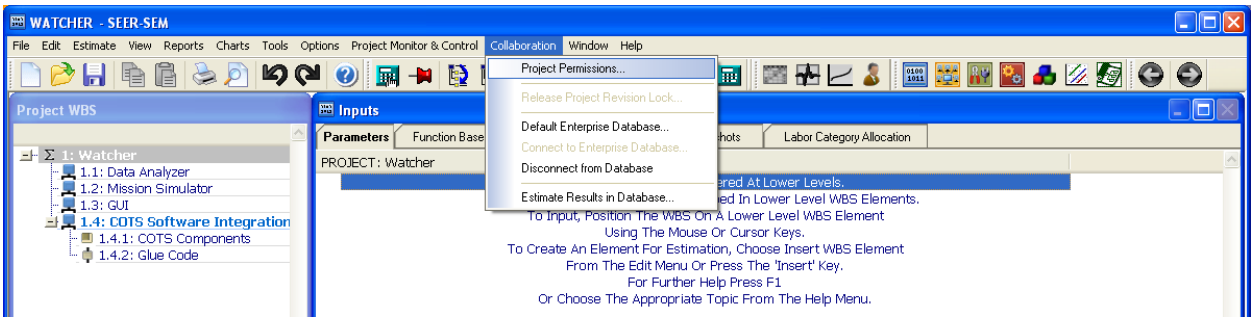


11.2.2.2 Removing a SEER User from Project Specific Permissions

Highlight the user's name in "Explicit permissions for users" list and click Remove button, then click Apply to save the changes.

11.2.2.3 Setting Project Specific Permissions from SEER for Software

A SEER user connected to SEER Database as "seer_admin_dbrole" or "seer_project_admin_dbrole" database role user or a current project owner can add or remove Project Specific Permissions directly from SEER for Software when the project, previously saved to SEER Database, is open by selecting the menu command, "Collaboration" → "Project Permissions". The process of assigning permissions within SEER for Software is identical to the one in the SEER Enterprise Database Manager.

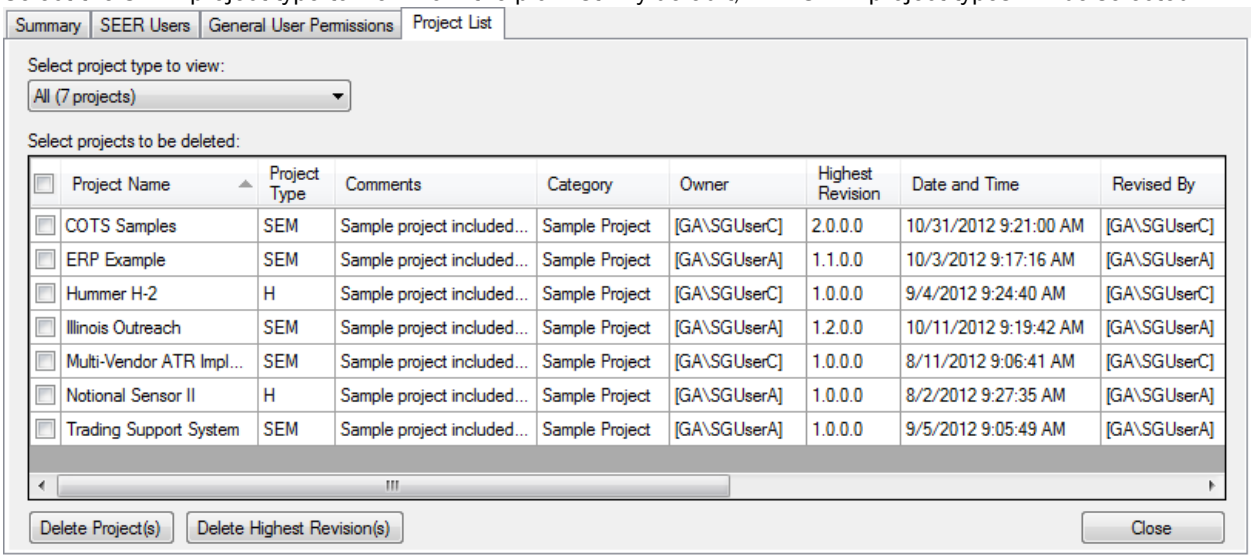


11.2.3 Viewing or Deleting Projects from the Database

Logged in as “seer_admin_dbrole” or “seer_project_admin_dbrole” database role user, select the menu command, “Access Control” → “Project List”.

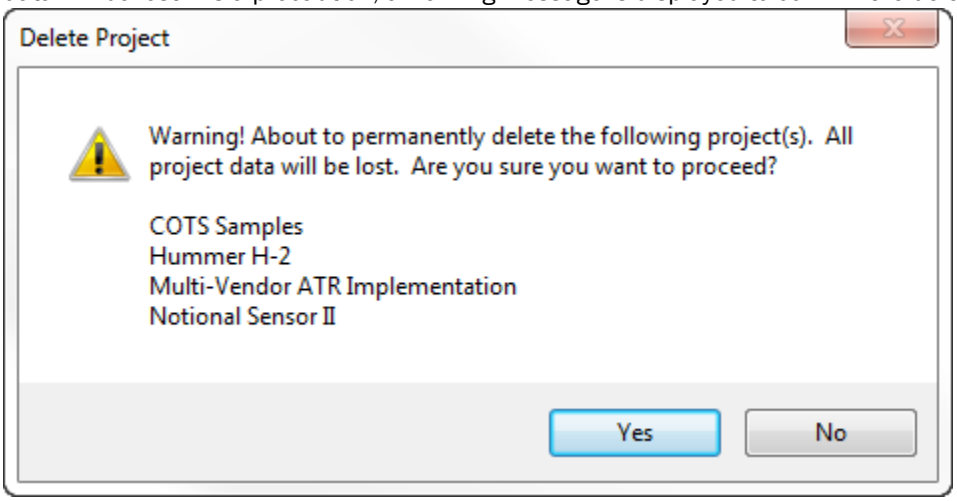
11.2.3.1 Viewing Projects

Select the SEER project type to view from the pick list. By default, “All” SEER project types will be selected.



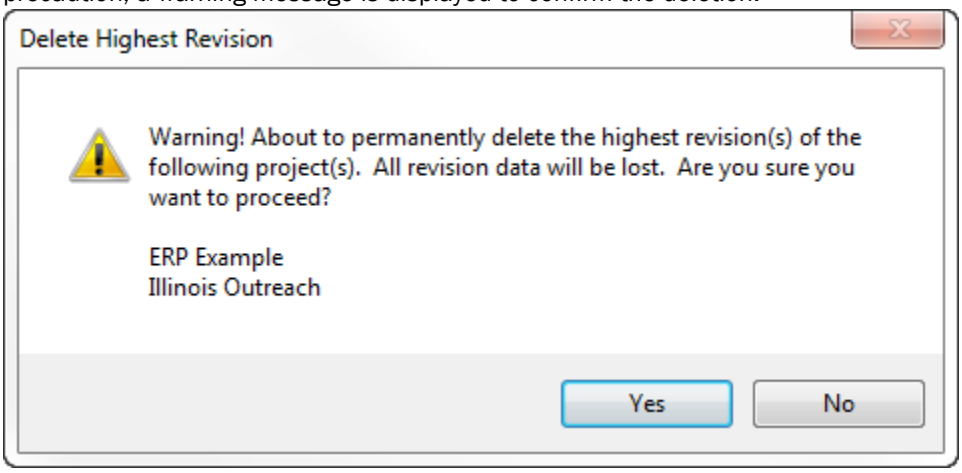
11.2.3.2 Deleting Projects

In the project list, select the project(s) to be deleted by selecting the checkbox next to the project name. Click Delete Project(s) button to permanently delete the selected projects. When a project is deleted, all project data will be lost. As a precaution, a warning message is displayed to confirm the deletion.



11.2.3.3 Deleting the Highest Revision of a Project(s)

In the project list, select the project(s) to have the highest revision deleted by selecting the checkbox next to the project name. Click Delete Highest Revision(s) button to permanently delete the highest revision of the selected projects. When the highest revision of a project is deleted, all revision data will be lost. As a precaution, a warning message is displayed to confirm the deletion.



11.3 Creating and Editing Custom Fields (Database Attributes)

Logged in as "seer_admin_dbrole" database role user, select the menu command, "Custom Fields" → "Manage Custom Fields".

Projects saved in SEER-DB have some general identifying fields such as project name, category, owner and dates saved. Custom fields allow you to define additional and specific project attributes. Configuring of custom fields is accomplished with SEER-EDM through the manage custom fields menu option. Once configured, users can specify the database project attributes at project save time. Users may also search on projects using any of the custom fields as a search criteria.

Custom fields are applicable to all project estimate types (SEER-SEM, SEER-IT, SEER-H, SEER-MFG, and SEER-SYS) saved to the database.

11.3.1 Types of Custom Fields

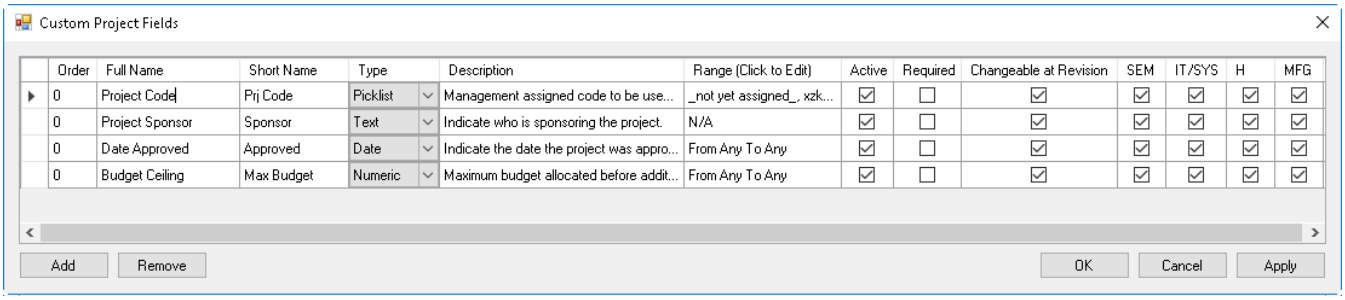
There are a total of 200 custom fields that may be configured:

- 50 picklist
- 50 text
- 50 numeric
- 50 date

Type	Description
Picklist	Picklist fields will present a drop down list of choices for the user to select. You may limit entry to the list of choices or you may allow users to enter text in addition to what is offered in the list. List items may be up to 64 characters in length.
Text	Text fields will present a free-form text entry field, up to 255 characters.
Date	Date fields will allow the user to enter a date. Entry of dates may be restricted to a specified range.
Numeric	Numeric fields will allow the user to enter any numeric value. Entry of numeric values may be restricted to a specified range.

11.3.2 Configuring Custom Fields

To configure a custom field, use SEER-EDM and select the Manage Custom Fields menu item. The list of custom fields will be presented. This is where you may add, change, deactivate, or remove custom fields.



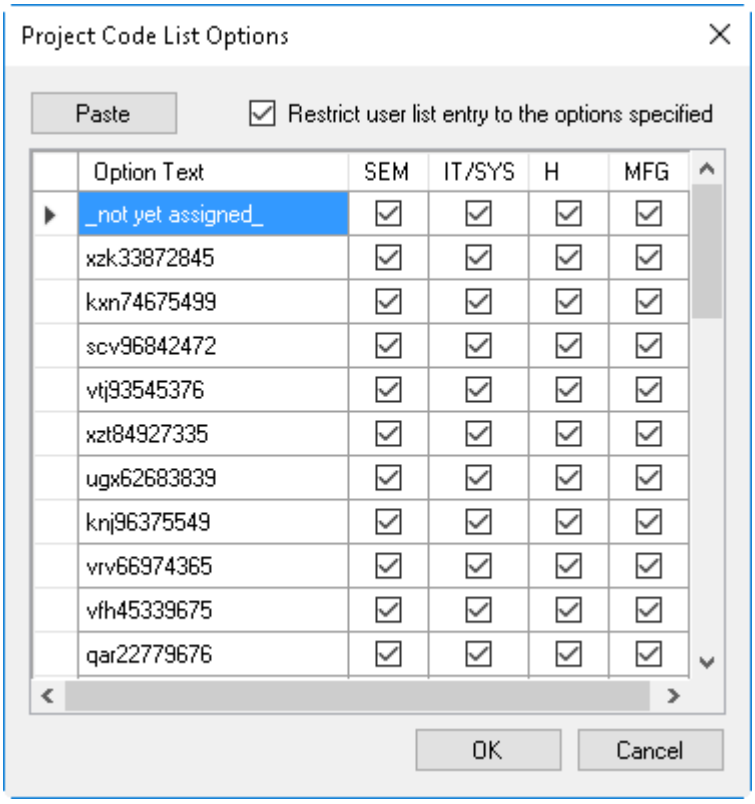
Each custom field has several attributes that will determine how it can be utilized by users.

Column	Description
Order	Set the display order of the custom attribute in the Database Project Attributes dialog. If not set, they will appear in the order entered.
Full Name	The maximum length is 32 characters.
Short Name	The maximum length is 12 characters.
Type	Select from one of the available types: Picklist, Text, Date, and Numeric.
Description	Optional information describing the custom field. This will be presented to the user when setting custom fields and can act as brief guidance for that field.
Range (Click to Edit)	For a Picklist type, specify the pick list selection options. There is an option to restrict the user to select from the specified. If this option is not selected, the user can type a new entry. For a Date type, specify the range of allowable dates. The default setting is no limit. You can set the range to be after a date, before a date, or between two dates. For a Numeric type, specify the range for the value. The default setting is no limit. You can set the range to have a lower limit (minimum of zero), an upper limit, or be between two values. For a Text type, this field is not applicable.

Active	Select this option to make the custom field active. If it is not selected, the custom field will not appear in the Database Project Attributes dialog and the user will not be able to use it when saving a project to the database. The default setting is the option is selected.
Required	Select this option to make the custom field a required attribute. The user will not be able to save a project to the database unless an entry/selection has been made. The default setting is the option is not selected. In the SEER application, an '*' character will be displayed next to the attribute and a footnote will be displayed: *Indicates a required attribute.
CAR	CAR = Changeable at Revision. Select this option to allow the user to change the value of the custom field at the revision level. The default setting is the option is selected. In the SEER application, an '+' character will be displayed next to the attribute and a footnote will be displayed: +Attribute is not editable at the revision level (except by owner or admin).
SEM	Select this option to make the custom field available for SEER-SEM projects.
IT/SYS	Select this option to make the custom field available for SEER-IT/SEER-SYS projects.
H	Select this option to make the custom field available for SEER-H projects.
MFG	Select this option to make the custom field available for SEER-MFG projects.

11.3.3 Editing Ranges

Picklists

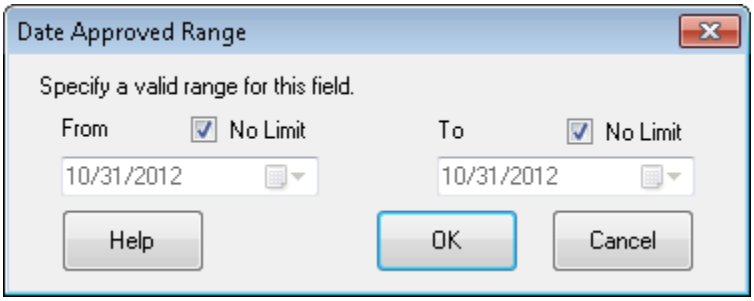


Picklist ranges can be typed in the list presented. If the list is long or available in text form somewhere, it may be copied to the clipboard and pasted in using the paste button. Picklist items are not automatically sorted and should be entered in the order in which you want them to appear.

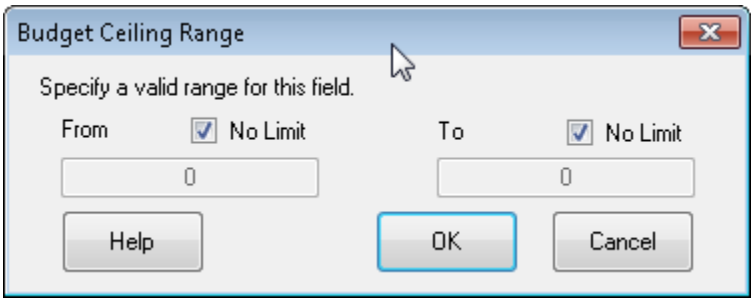
If you want to limit user entries strictly to the listed items, check “Restrict user list entry to the options specified”.

Use the SEM, IT/SYS, H & MFG checkboxes to limit certain picklist choices to certain estimate types.

Dates



Numeric



11.3.4 Deactivating and Removing Custom Fields

If a custom field is no longer needed or desired you may deactivate or remove it. Deactivating a custom field maintains the data in the database, but users may no longer set it, change it or search on it. If no project data has been set for a custom field and it is not wanted, it can be removed. You cannot remove a custom field if project data has been entered.

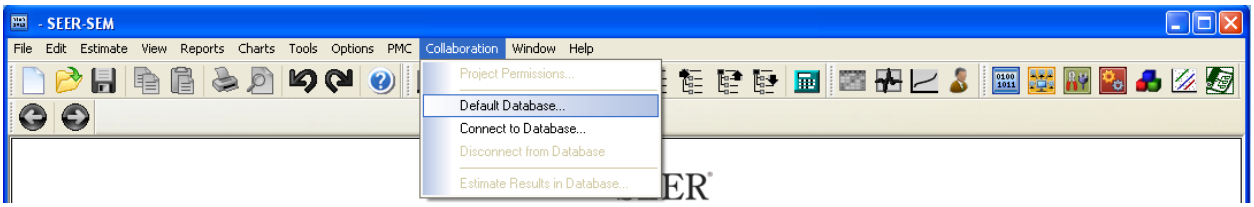
12. SEER for Software Workflow Using SEER Database

The database functionalities in SEER applications have been designed with an emphasis on supporting the typical work flow of a cost analyst. The applications has been designed to offer the benefits of a database, such as shared data and multi-user support (i.e. concurrency), without sacrificing usability.

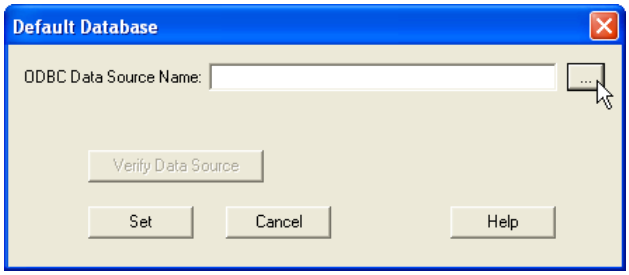
Unlike the users in a traditional transaction-oriented business process, a cost analyst typically performs trade-offs on parts of a cost estimate for a relatively long period of time, before saving the work. It is with this work flow in mind, that changes made by a user, to a SEER application project opened from the database, are not committed individually and immediately to the database. Instead, all changes are saved to the database, as a project revision, when the user selects the menu command, “Save to Database” (or “Save to Database As”).

12.1 Setting up a Default Database

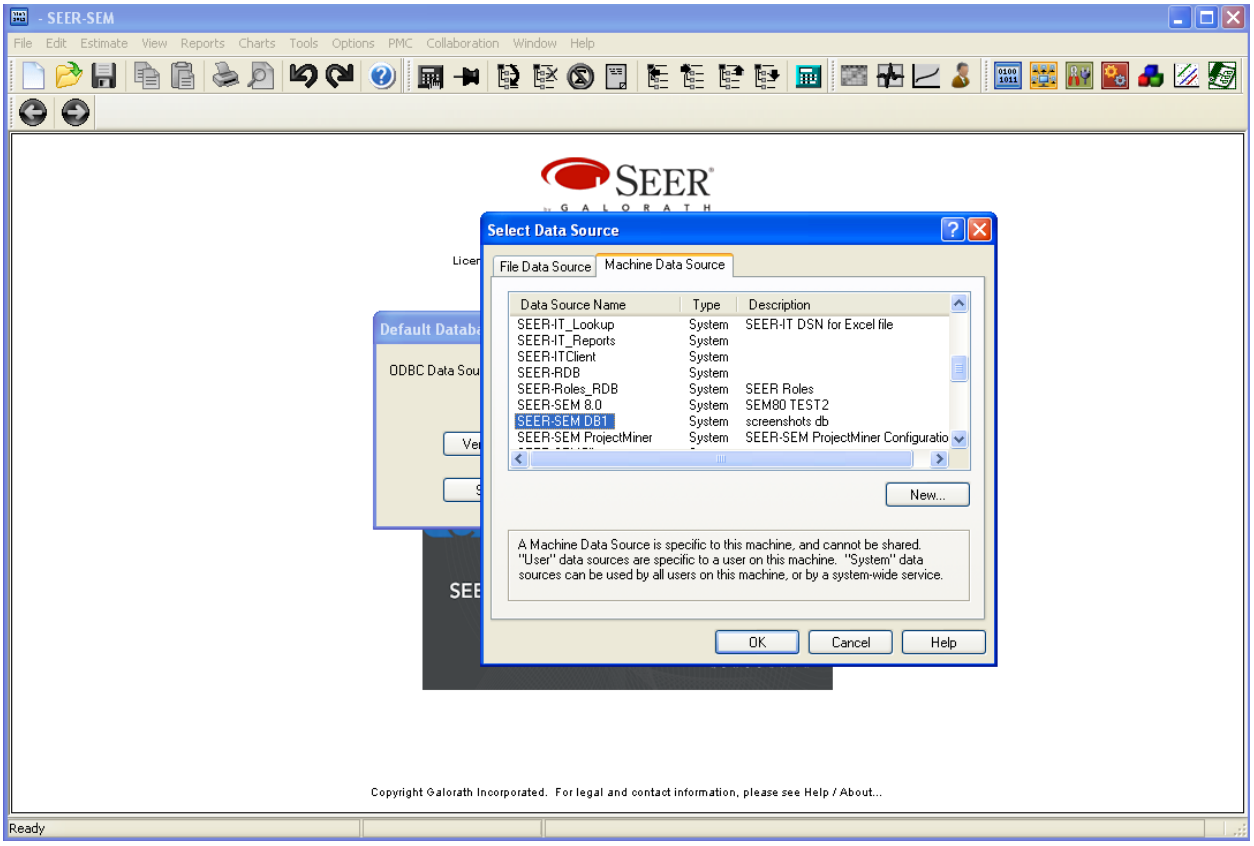
Select the menu command, “Collaboration” → “Default Database”.



A Default Database dialog will appear to select ODBC Data Source Name of the database.



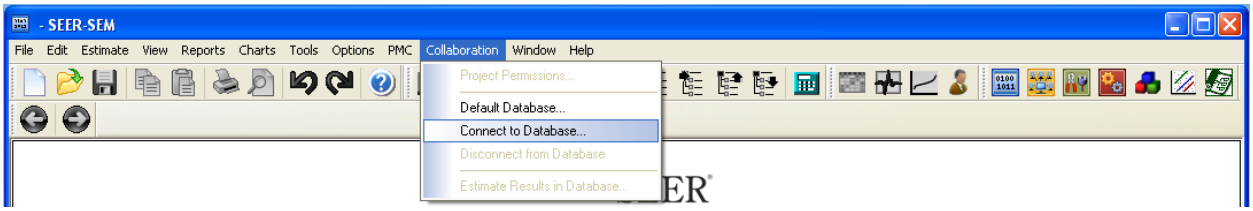
Click Browse to select Data Source.



See section “Configuring ODBC Data Source at SEER Application Runtime” for more details on how to create a data source at SEER application runtime.
Click Verify Data Source after selecting the data source, and then click Set.

Select the menu command, “Collaboration” → “Connect to Database”.

12.2 Connecting to SEER Database

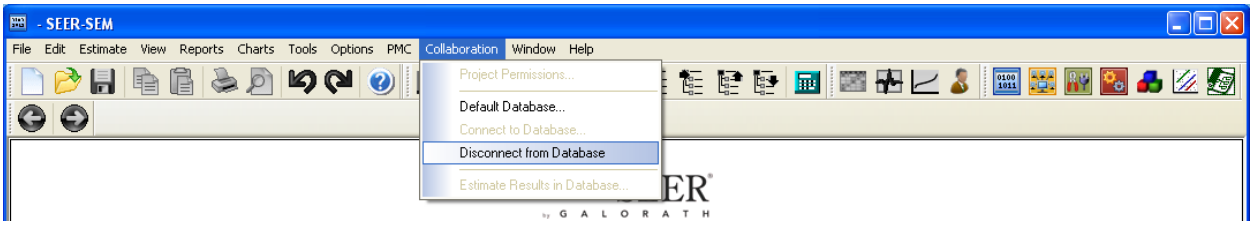


If a Default Database is already set, then the user just needs to login.

If a Default Database is not set, the user will need to specify the ODBC Data Source for the database before providing a login.

12.3 Disconnecting from a Database

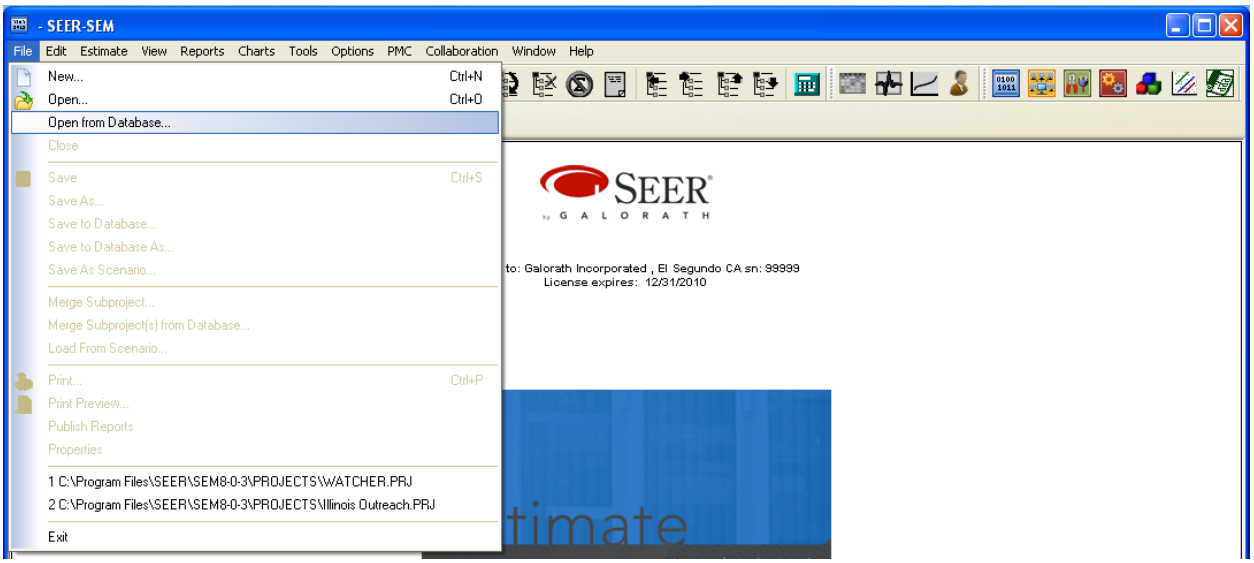
Select the menu command, “Collaboration” → “Disconnect from Database”.



In order to connect to another database, the user shall disconnect from the current database first.

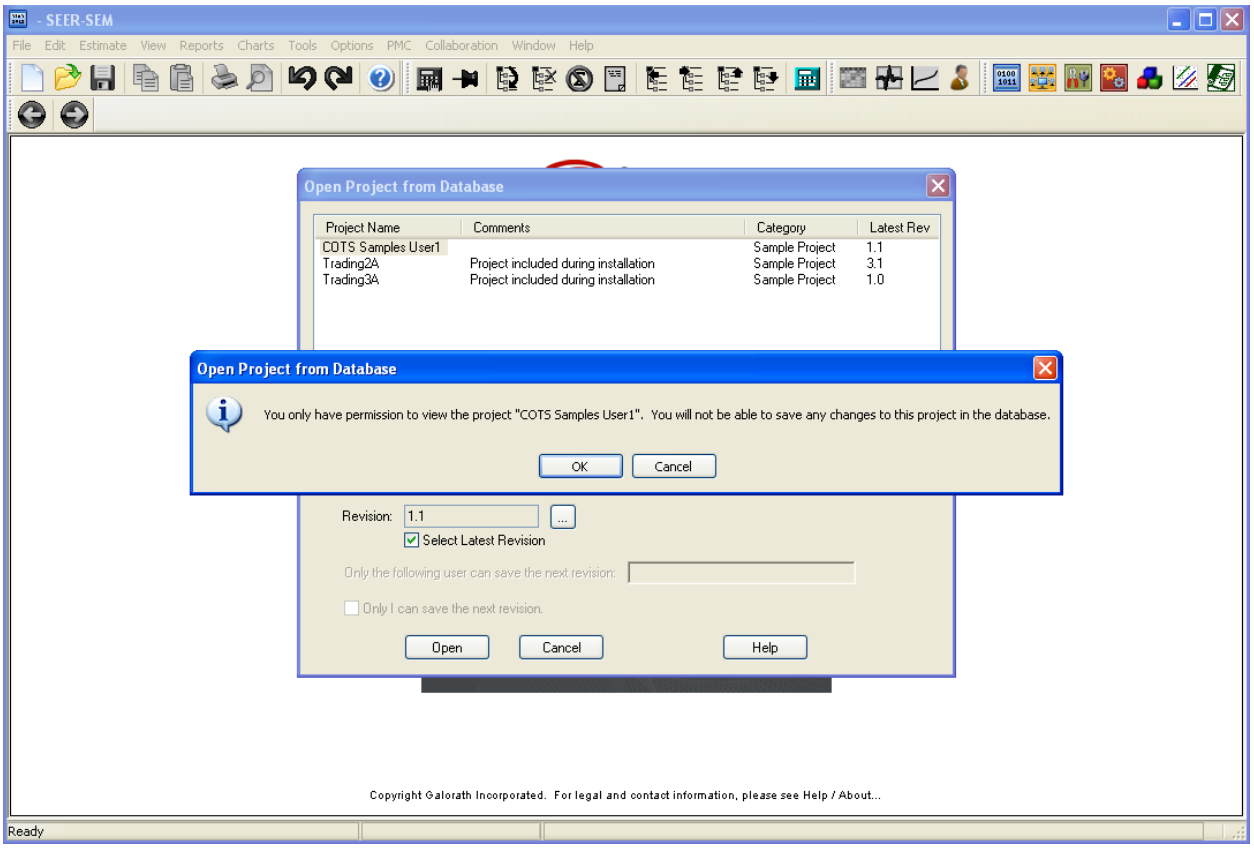
12.4 Opening a Project from a Database in SEER for Software

Select the menu command, “File” → “Open from Database”.

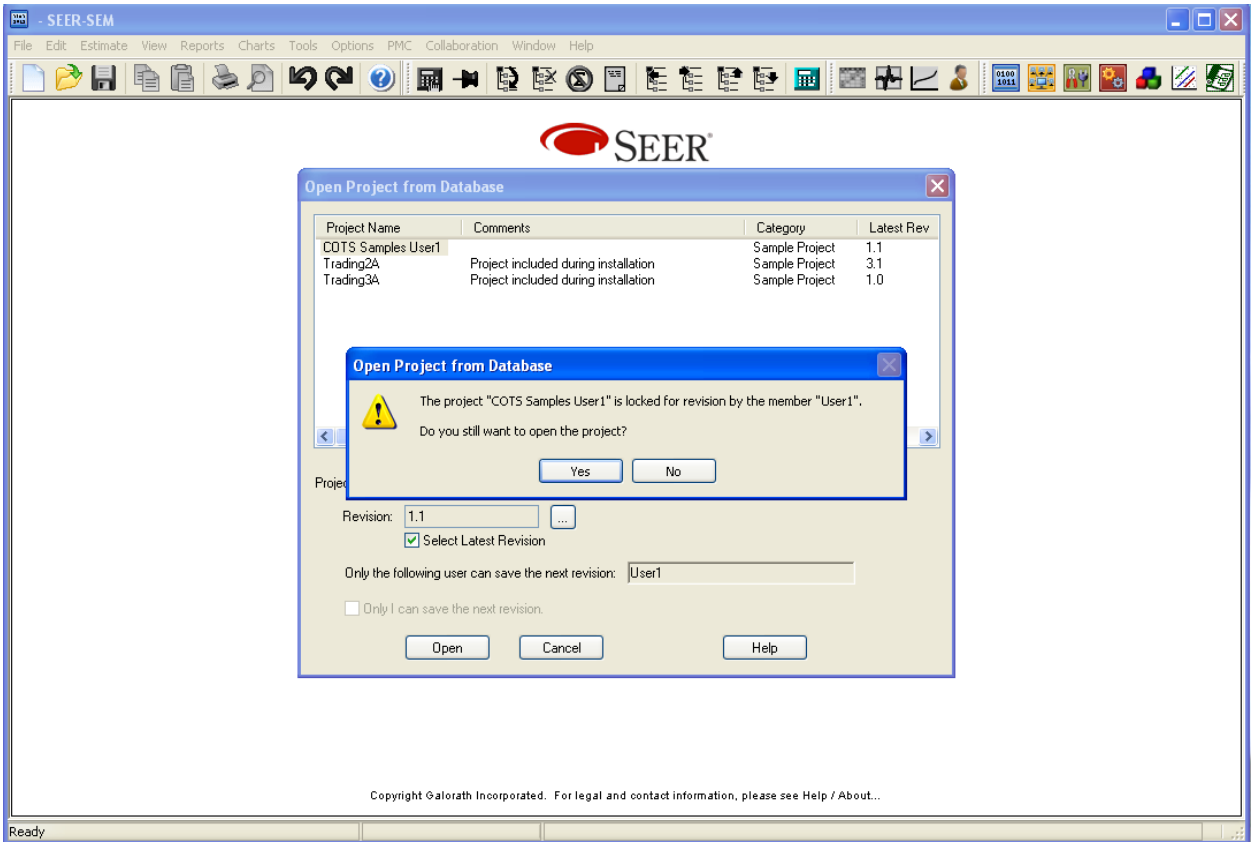


Then select a project to open from a list of projects currently saved to SEER Database. The users can see only the projects they own and the projects that have View or Modify permissions assigned to them.

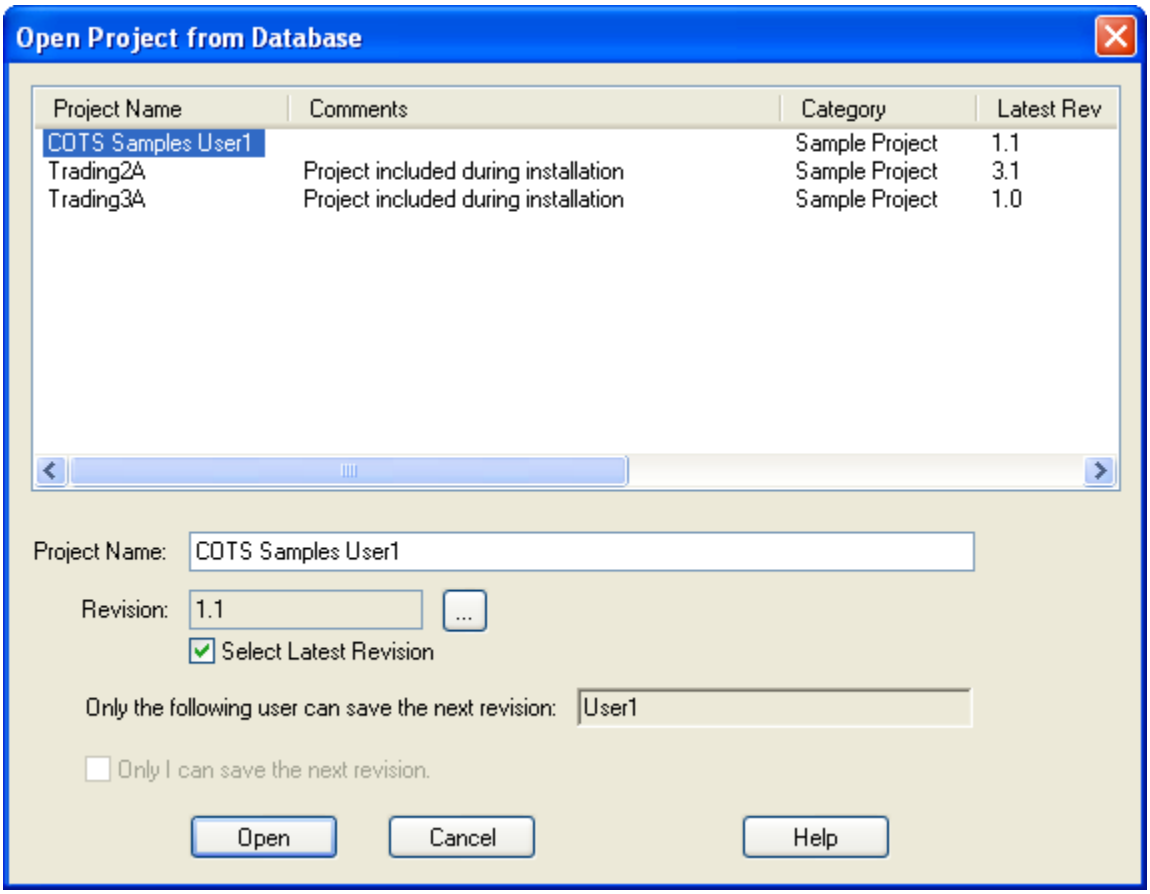
If a user has View permission only, a warning message will appear upon opening the project that the user does not have permission to modify the project. “Only I can save the next revision” box becomes disabled.



When a user with Modify permission opens a project and checks “Only I can save the next revision” box, other users with Modify permission will not be able to save the next revision.

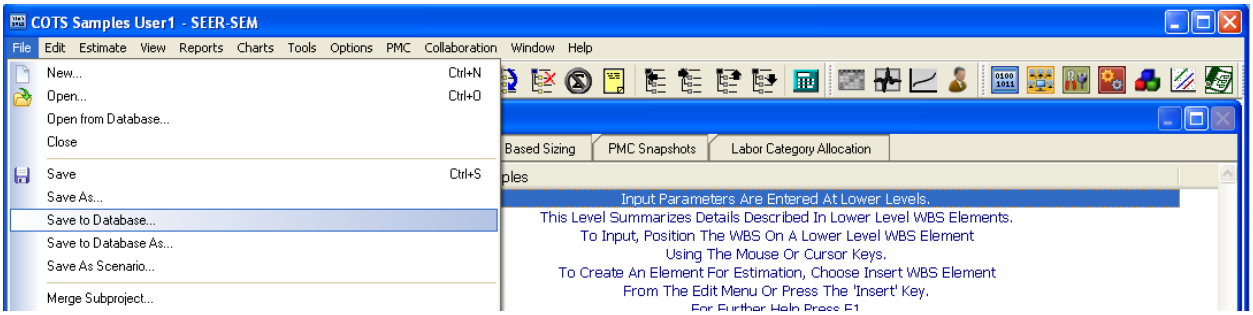


Clicking Yes opens the project for viewing but no modifications to the project can be saved.
The name of the user locking the project for revision appears in “Only the following user can save the next revision” field when any other users open the project.

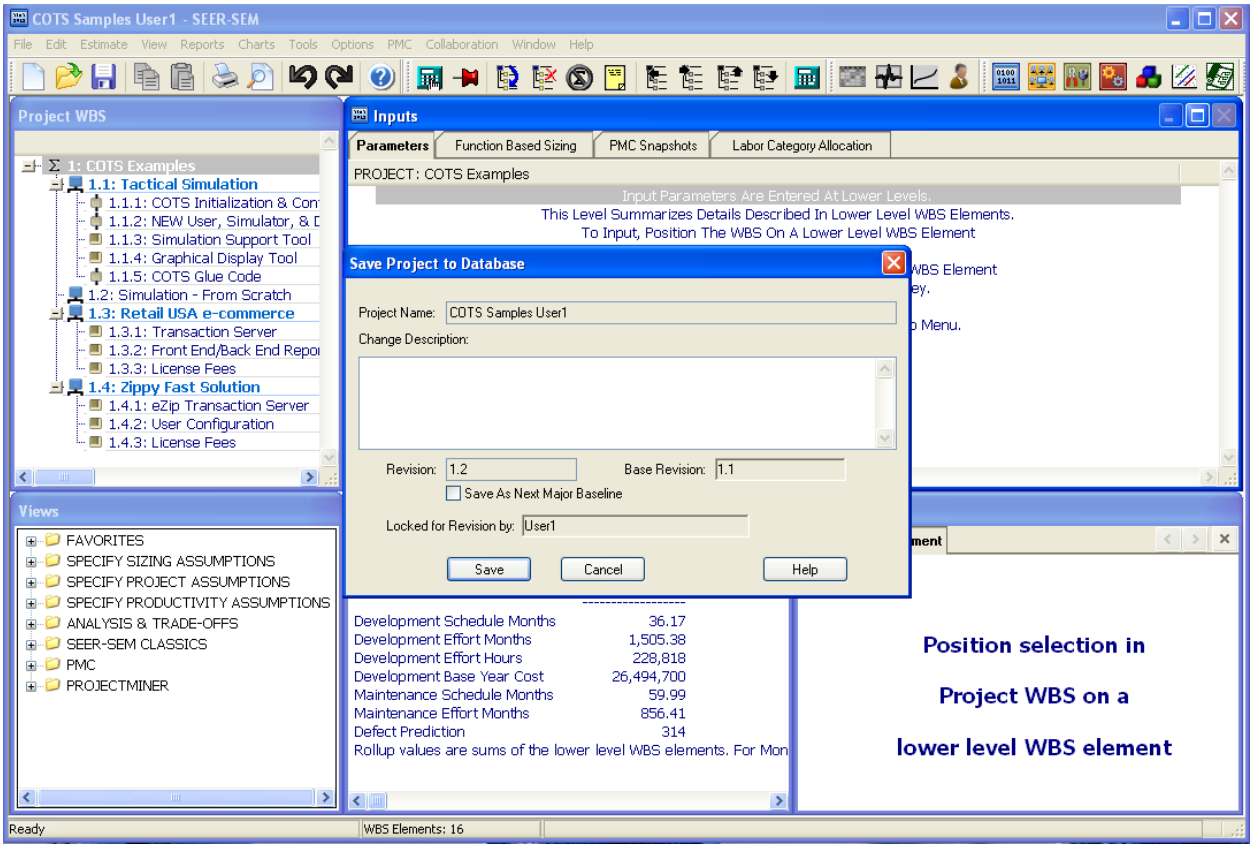


12.5 Saving a Project to a Database in SEER for Software

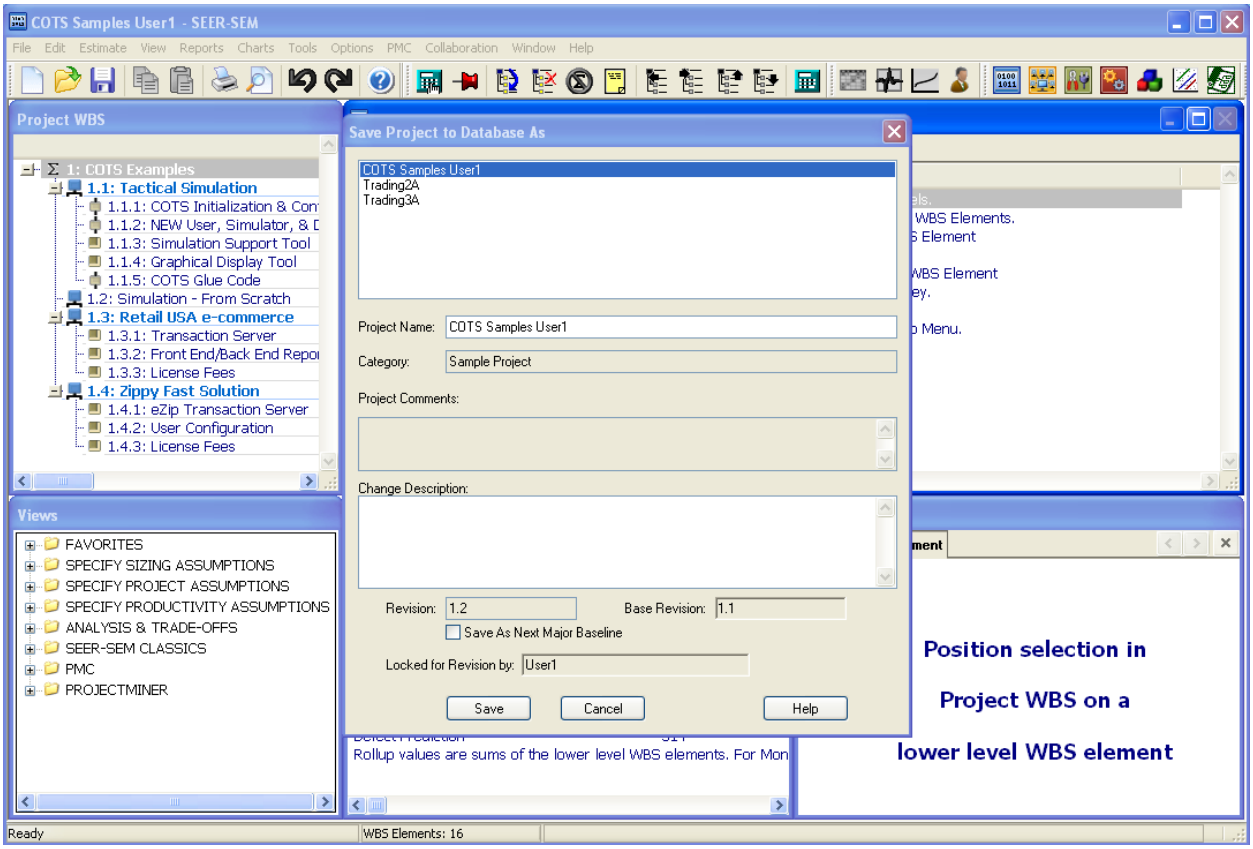
Select the menu command, "File" → "Save to Database".



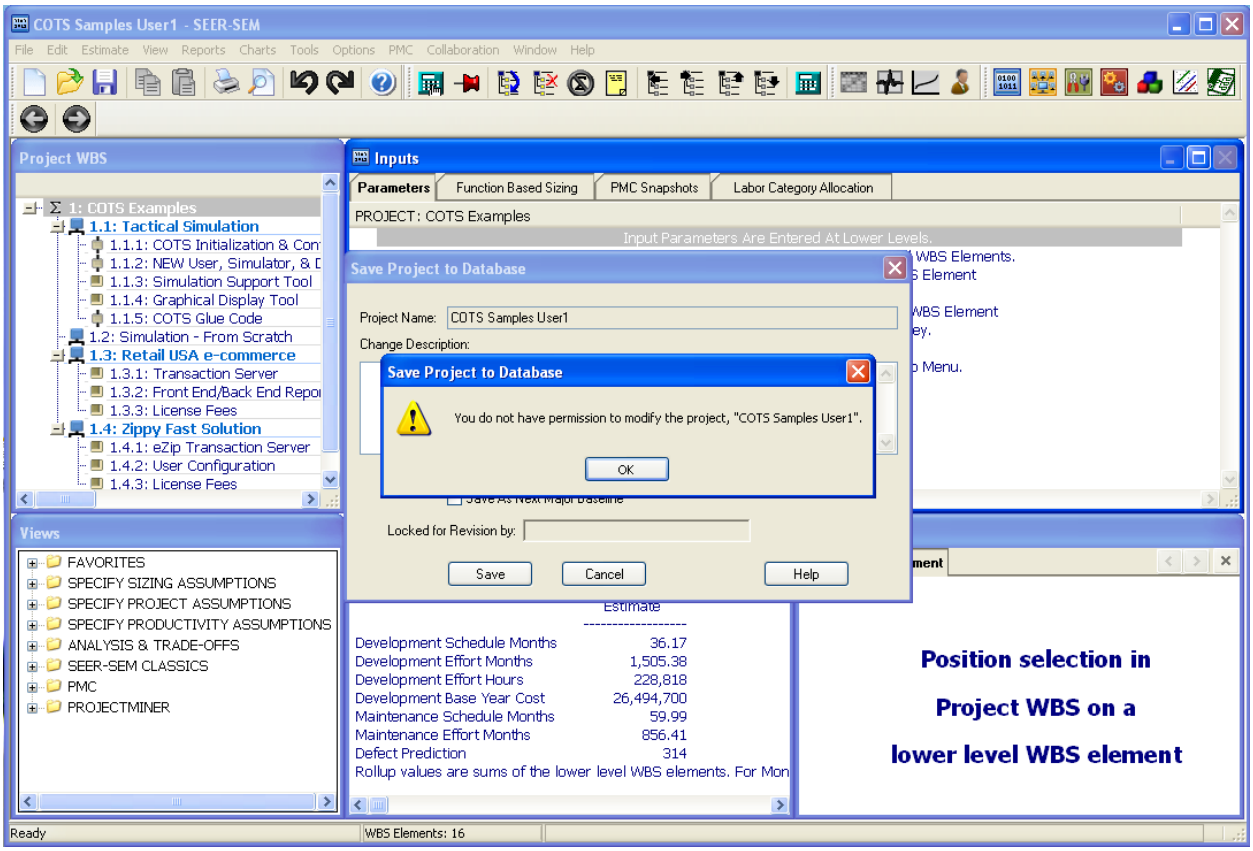
If a project already exists in SEER-DB, selecting Save to Database option allows the user to save the project only as a new revision or a new major baseline.



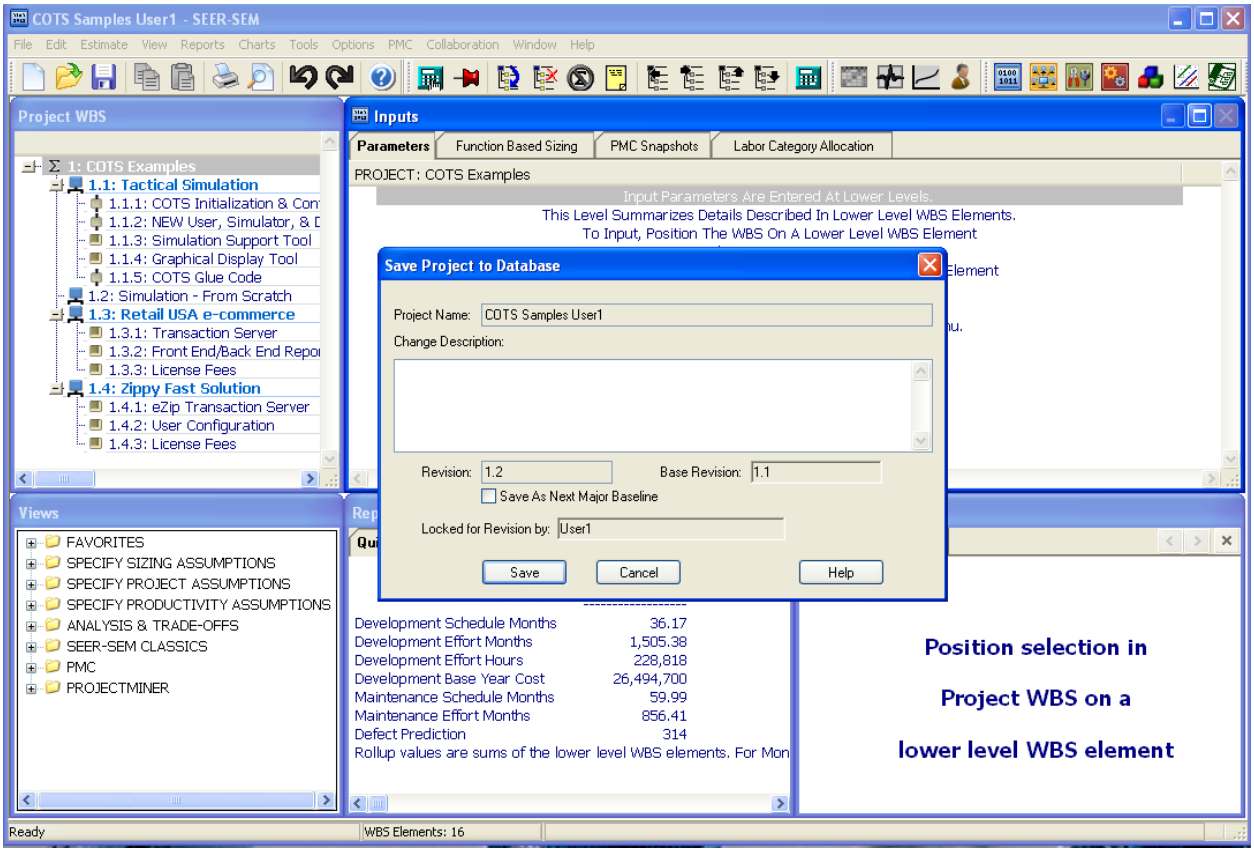
Selecting Save to Database As option allows the user to save a project as a new revision, a new major baseline or a new project under a different name.

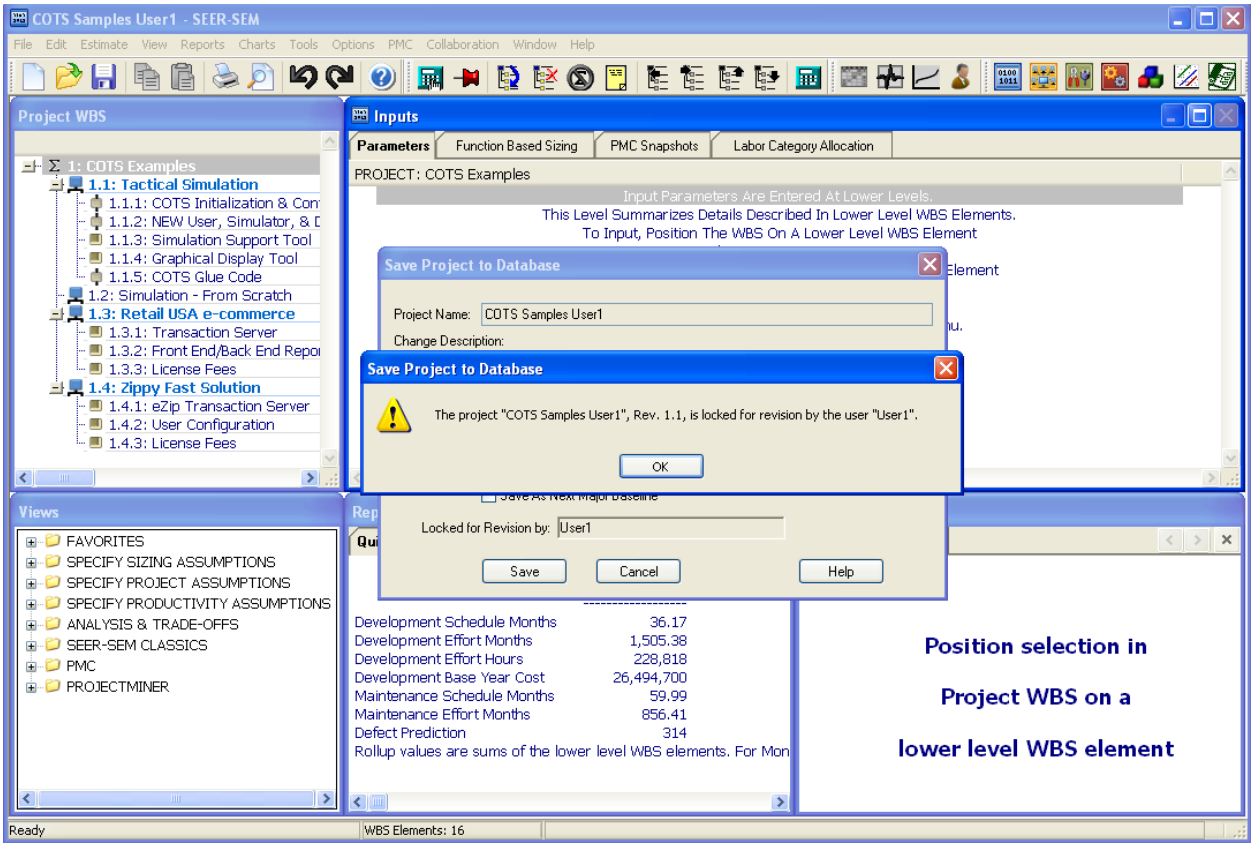


If a user does not have the permission to modify the project but attempts to save it to the database, a warning message appears.



If a user has Modify permission but the project is locked by another user, the name of the user locking the project will show in “Locked for Revision by” field and a warning message will be issued when attempting to save.


COTS Samples User1 - SEER-SEM
Project WBS
Inputs
Parameters
Function Based Sizing
PMC Snapshots
Labor Category Allocation
PROJECT: COTS Examples
Input Parameters Are Entered At Lower Levels.
This Level Summarizes Details Described In Lower Level WBS Elements.
To Input, Position The WBS On A Lower Level WBS Element
Save Project to Database
Project Name: COTS Samples User1
Change Description:
Revision: 1.2
Base Revision: 1.1
Save As Next Major Baseline
Locked for Revision by: User1
Save
Cancel
Help
Development Schedule Months 36.17
Development Effort Months 1,505.38
Development Effort Hours 228,818
Development Base Year Cost 26,494,700
Maintenance Schedule Months 59.99
Maintenance Effort Months 856.41
Defect Prediction 314
Rollup values are sums of the lower level WBS elements. For Mon
Position selection in
Project WBS on a
lower level WBS element
Ready
WBS Elements: 16


COTS Samples User1 - SEER-SEM
Project WBS
Inputs
Parameters
Function Based Sizing
PMC Snapshots
Labor Category Allocation
PROJECT: COTS Examples
Input Parameters Are Entered At Lower Levels.
This Level Summarizes Details Described In Lower Level WBS Elements.
To Input, Position The WBS On A Lower Level WBS Element
Save Project to Database
Project Name: COTS Samples User1
Change Description:
Save Project to Database
The project "COTS Samples User1", Rev. 1.1, is locked for revision by the user "User1".
OK
Locked for Revision by: User1
Save
Cancel
Help
Development Schedule Months 36.17
Development Effort Months 1,505.38
Development Effort Hours 228,818
Development Base Year Cost 26,494,700
Maintenance Schedule Months 59.99
Maintenance Effort Months 856.41
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Rollup values are sums of the lower level WBS elements. For Mon
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WBS Elements: 16