FitPro™ Ultra Microsoft® SQL Server® Integration Documentation and SQL Scripts

Document for Database Schema Version 4

Overview

For organizations using multiple PortaCount™ fit testers running on several computers, connecting FitPro™ Ultra software to a shared Microsoft® SQL Server® database can streamline record-keeping and compliance tracking in several key ways:

- **Centralized Data Management**: All data related to respiratory fit testing, including fit test results, equipment daily check records, respirator lists, and employee records, can be stored centrally in the Microsoft® SQL Server® database. This ensures easy access and retrieval of accurate information when needed.

- **Enhanced Data Integrity and Security**: Microsoft® SQL Server® provides robust mechanisms for data integrity and security, ensuring that sensitive information related to fit testing is protected from unauthorized access or loss.

- **Efficient Reporting and Analysis**: Real-time updates to the shared database allow for immediate reporting on employee fit test results, trends in compliance metrics, and identification of potential issues or areas needing improvement. This facilitates proactive management and decision-making.

- **Scalability and Collaboration**: As the organization grows or expands its fit testing programs, a shared database supports scalability by accommodating increased data volumes and additional users. Multiple stakeholders, including Respiratory Protection Program Managers and Fit Test Administrators, can collaborate effectively using the centralized platform.

Audience for This Document

These instructions and scripts are written with trained Microsoft® SQL Server® database administrators in mind. They provide high-level instructions and SQL scripts to guide database professionals in what is needed to integrate TSI® Incorporated's FitPro™ Ultra software with a Microsoft® SQL Server database. If you would like to integrate your FitPro™ Ultra software with a Microsoft® SQL Server® database, but you do not have resources with this type of training or expertise, contact TSI® Incorporated to explore available options at 800-680-1220, +1 651-490-2860, or https://www.tsi.com/support.

A Note About Database Schema Versions

The database "schema" refers to the layout and characteristics of the database tables and columns. The FitPro™ Ultra software application requires that the database be configured with a specific schema. Occasionally, new features of FitPro™ Ultra require that the database schema be updated so that new types of information can be stored there. To maintain database compatibility, a version identifier for the schema is available from the database so that FitPro™ Ultra can determine the level of compatibility for application features. When a change is made to the FitPro Ultra database in order to support a new feature, the database schema version is incremented. The version number is independent of the software version.

The current database schema version is version 4 and the SQL scripts referenced in the document can be used to create a database with the version 4 schema. The version 4 schema is compatible with FitPro Ultra versions beginning with v4.11.0 through the latest version available at the time of this writing, v5.2.0. When new versions of FitPro Ultra are released, care is taken to maintain a level of backward compatibility and to provide in-program messaging and updated documentation when schema updates are required.

Locating the SQL Scripts

To get started, locate the "MS SQL Support" folder that was installed with FitPro Ultra. This is typically found at "C:\Program Files (x86)\TSI\FitPro Ultra\MS SQL Server". To get there quickly, right click the FitPro Ultra icon and select *Open File Location* then find the *MS SQL Support* folder there.

Creating A New FitPro Ultra Database and Schema

In *MS SQL Support* folder, locate the script "*CreateFitPro4Tables.sql*". This is the script that will be used to create the required FitPro Ultra schema. *Note that databases created using this script are meant to be used with the latest version of FitPro Ultra software, version 5.2.0 (and is compatible with version 4.11.0 or newer). Connecting earlier versions of FitPro Ultra to a database created with the included script may have unexpected results.*

Using a tool such as "SQL Server Management Studio", connect to the Microsoft® SQL Server® database you will be connecting to with FitPro Ultra to store fit test data.

Within SQL Server Management Studio, open the SQL Script file "CreateFitPro4Tables.sql". Please read the opening comments found in that script file and make sure you understand what it does.

Before running the script, you will need to create a new database on the SQL Server instance. The provided "CreateFitPro4Tables.sql" script uses the database name "FitProUltraData"; if you name the new database "FitProUltraData", you will be able to use the script to create the schema without editing it. If you choose to use a different name, be sure to replace all instances of the name "FitProUltraData" in the script with the database name you have chosen.

Once a new database has been created and the script has been edited to use the new database name (if needed), the script can be run to create the required schema.

Managing security settings for the database is at the discretion of the admin configuring the database. FitPro Ultra uses connection strings to connect to the database and can use either SQL Authentication (user-name/password) or Windows Authentication. FitPro Ultra users running the software on computers within the organization will need read and write permission for all the database tables to create records of the people to be tested, the respirators that will be used, records of PortaCount™ equipment checks and fit test results.

Configuring FitPro™ Ultra Microsoft® SQL Server® Connection

To connect a computer running the FitPro™ Ultra software to the Microsoft® SQL Server®, it must have network access to the server. Further, the logged in Windows® user needs read/write access to the tables in the database *or* the connection string must use the username/password form of security access – the security configuration of the database is left to the discretion of the database administrator.

Once the database is set up and tested, configuring FitPro™ Ultra is very simple and only requires that the database admin provide an Microsoft® SQL Server® "connection string" to users configuring FitPro Ultra. The connection string includes information about the network address and security credentials for the database.

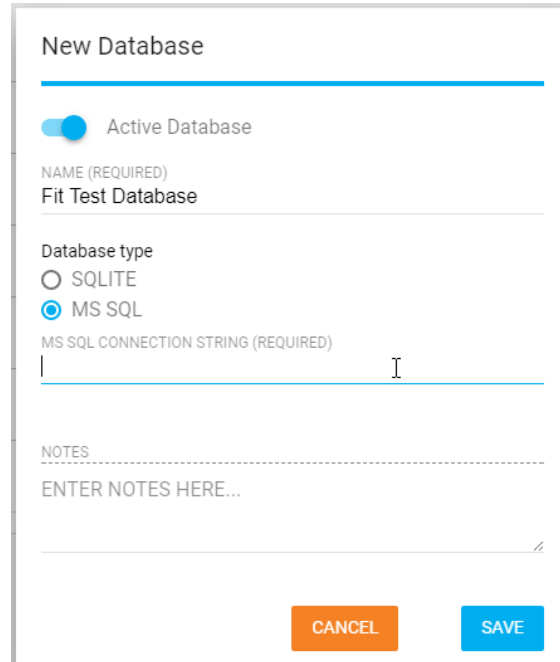1. Within the FitPro Ultra software, from the main menu, select **Data Management**.
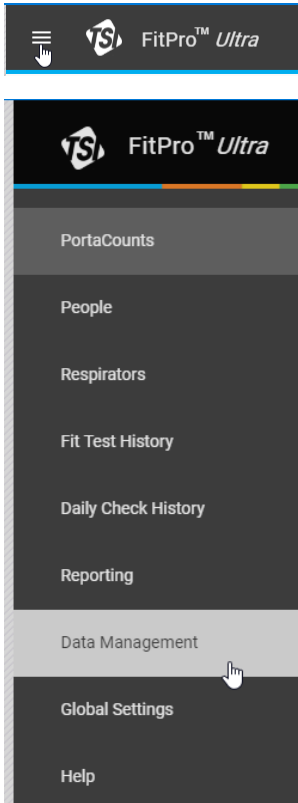
2. On the Data Management screen, select **NEW** to create a connection to the Microsoft® SQL Server® database.

3. On the new database screen, give the database a descriptive name to identify it uniquely within the program – this can be any name of your choice.

4. Select the database type *MS* SQL and enter the Microsoft® SQL Server® connection string that represents the target database (see "Microsoft® SQL Server® Connection String Syntax Requirements" below for additional connection string tips).

The connection string field is treated like a password field with obscured text because depending on the configuration, it may contain user-name and password information. This still provides only weak security and where more security is needed, it is recommended that Windows® Authentication be used instead of the less secure SQL Server Authentication (user-name and password in the connection string).

Any notes about the database can also be entered in the Notes section. Since the connection string is obscured, it can be helpful to copy it into the Notes field if no security details are exposed.

Microsoft® SQL Server® Connection String Syntax Requirements

The library used to interface FitPro™ Ultra with Microsoft® SQL Server® is particular about connection string syntax and some connection strings that are technically okay with Microsoft® SQL Server® will not connect through FitPro™ Ultra software.

Connection strings in exactly this form work consistently in our testing.

For SQL Security (user name and password specified in the connection string):

```
server=MyServerName;Database=FitProUltraData;uid=MyUserName;pwd=MyPassword;Driver={
SQL Server Native Client 11.0}
```

Note "uid" vs "User ID" and "pwd" vs "Password" are used when specifying user id and password credentials.

The "Driver=" statement is needed and may be different depending on what drivers are available on the client computer. The generic designation, "`Driver={SQL Server}`" may be sufficient.

For Windows Authentication Security (access is based on users' Windows credentials in a network domain):

```
server=MyServerName;Database=FitProUltraData;Trusted_Connection=Yes;Driver={SQL
Server Native Client 11.0}
```

Again, the "Driver=" statement is needed and may be different depending on what drivers are available on the client computer. The generic designation, "`Driver={SQL Server}`" may be sufficient.

For the "server=" section, if the server is running a specifically named instance of Microsoft® SQL Server®, the form "server=hostname\instance;" may be required, for example," server=MyHost\SQLEXPRESS;".

Here is an on article on testing connection strings using PowerShell that might be useful (this link is not to a TSI® site, and TSI® did not author this article):

https://mcpmag.com/articles/2018/12/10/test-sql-connection-with-powershell.aspx

Note that when using PowerShell, the "Driver=" directive is not recognized. Leave that part of the connection string off when testing from PowerShell but add it back for FitPro Ultra.

Updating an Existing Version 3 Database to Version 4

NOTICE
Before updating an existing database, **be sure to back up the data**.

In *MS SQL Support* folder, locate the script "Update to version 4 schema.sql". Use that script to update an existing version 3 database to version 4 to support the CSA-Z94.4-18 comfort assessment information. Read the opening comments for instructions on editing the database name before running it.

TSI Knowledge Beyond Measure.