

Advanced Application Manual

Database Server

This manual walks through the steps to set up MS SQL Server

V1.00

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1. Overview

MS SQL is supported in EasyBuilder Pro V6.01.01 and later versions.

This user manual explains step by step on how to create and configure MS SQL server, and how to design an EasyBuilder Pro project.

2. Installing MS SQL

The SQL server used in the following demonstration is MS SQL.

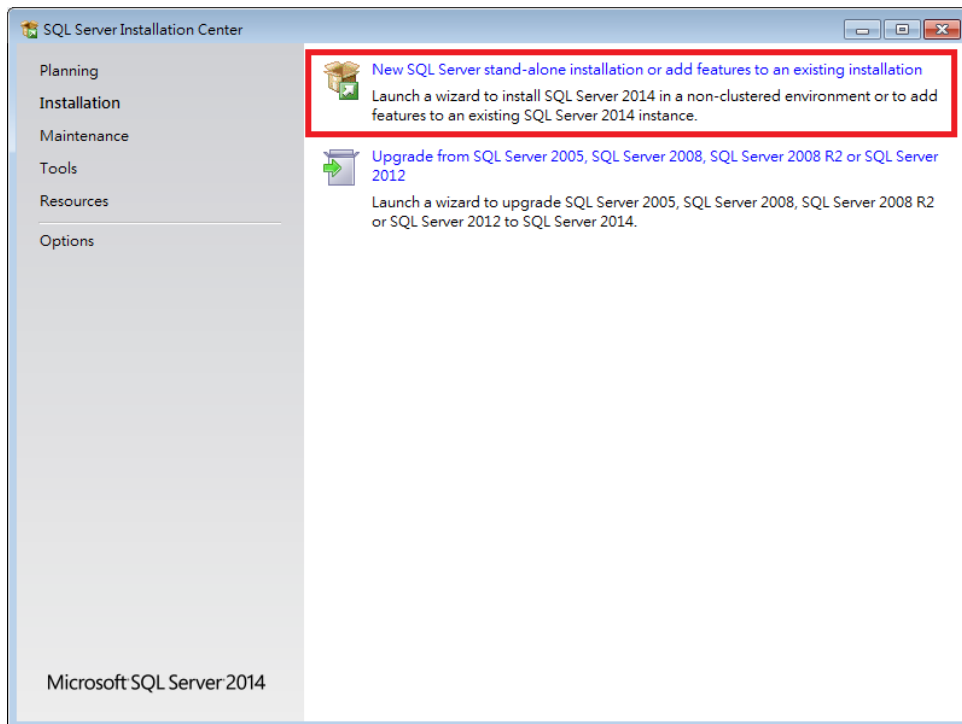
1. Download MS SQL Express from the link provided in Chapter 6.
Recommended version for
Windows® 10: MS SQL Express 2017
Windows® 7: MS SQL Express 2014
2. Open the downloaded installation file.
3. MS SQL Express 2017: Install online
MS SQL Express 2014: Install the following files.
 - a. Express 32/64 BIT\SQLEXP_x86/x64_ENU.exe
 - b. MgmtStudio 32/ 64 BIT\SQLManagementStudio_x86/x64_ENU.exe

MS SQL Express 2014 is used in the following demonstration. MS SQL Express 2017 can be configured in the same way.

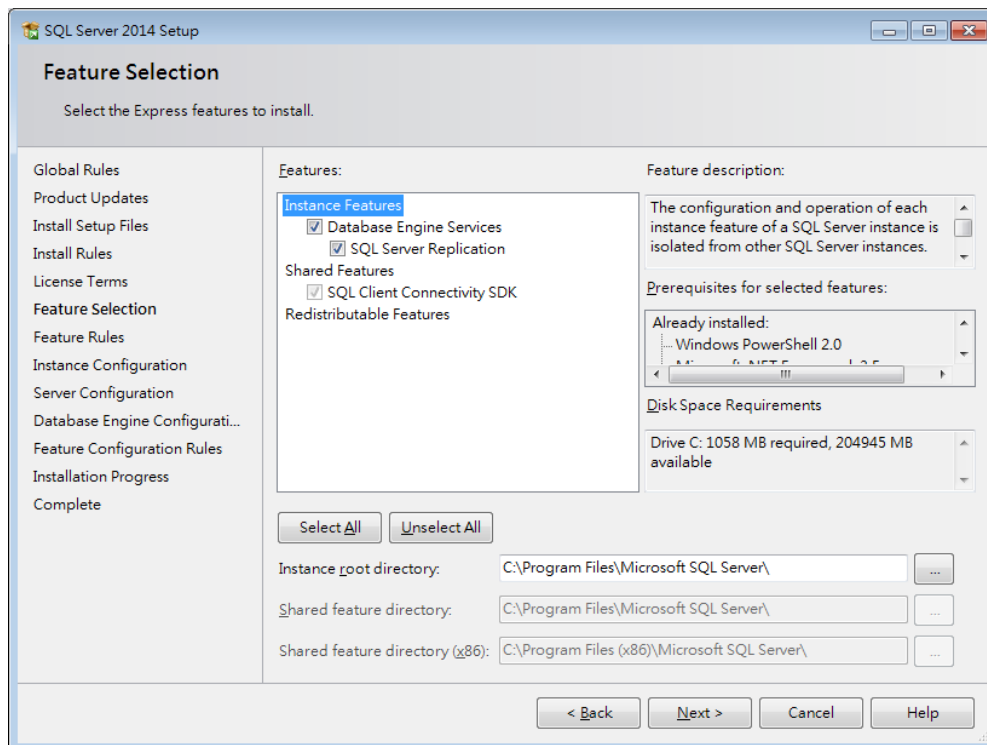
4. After running Express 64 BIT\SQLEXP_x64_ENU.exe, a “SQLEXP_x64_ENU” folder will be generated. Run “SETUP.EXE” file in this folder to start installing.
If the OS of your PC is Windows® 7 32BIT x86, please install Express 32 BIT\SQLEXP_x86_ENU.exe.

 1033_ENU_LP	2018/9/21 下午 0...	檔案資料夾	
 redist	2018/9/21 下午 0...	檔案資料夾	
 resources	2018/9/21 下午 0...	檔案資料夾	
 x64	2018/9/21 下午 0...	檔案資料夾	
 AUTORUN.INF	2014/2/6 下午 12...	安裝資訊	1 KB
 MEDIAINFO.XML	2014/2/21 下午 0...	XML Document	1 KB
 PackageId.dat	2018/9/21 下午 0...	DAT 檔案	1 KB
 SETUP.EXE	2014/2/21 上午 0...	應用程式	75 KB
 SETUP.EXE.CONFIG	2014/1/17 上午 0...	XML Configurati...	1 KB
 SQLSETUPBOOTSTRAPPER.DLL	2014/2/21 上午 0...	應用程式擴充	219 KB
 SQMAPI.DLL	2014/2/21 上午 0...	應用程式擴充	180 KB

- Click [New SQL Server stand-alone installation or add features to an existing installation].

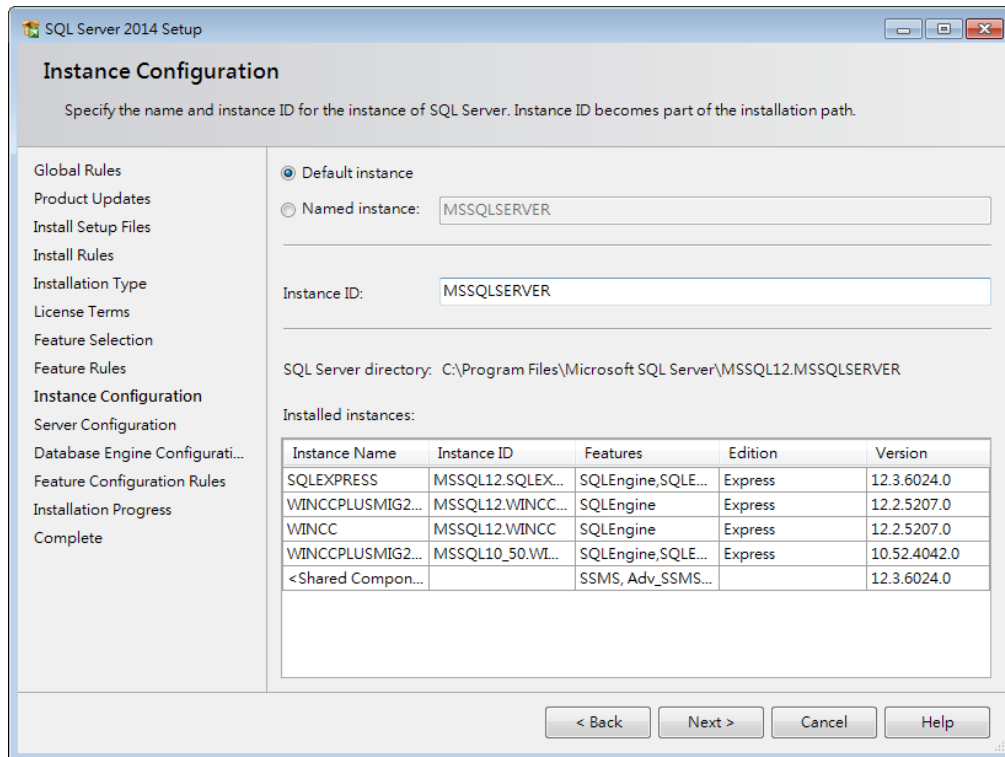


- Use default settings in Feature Selection window.

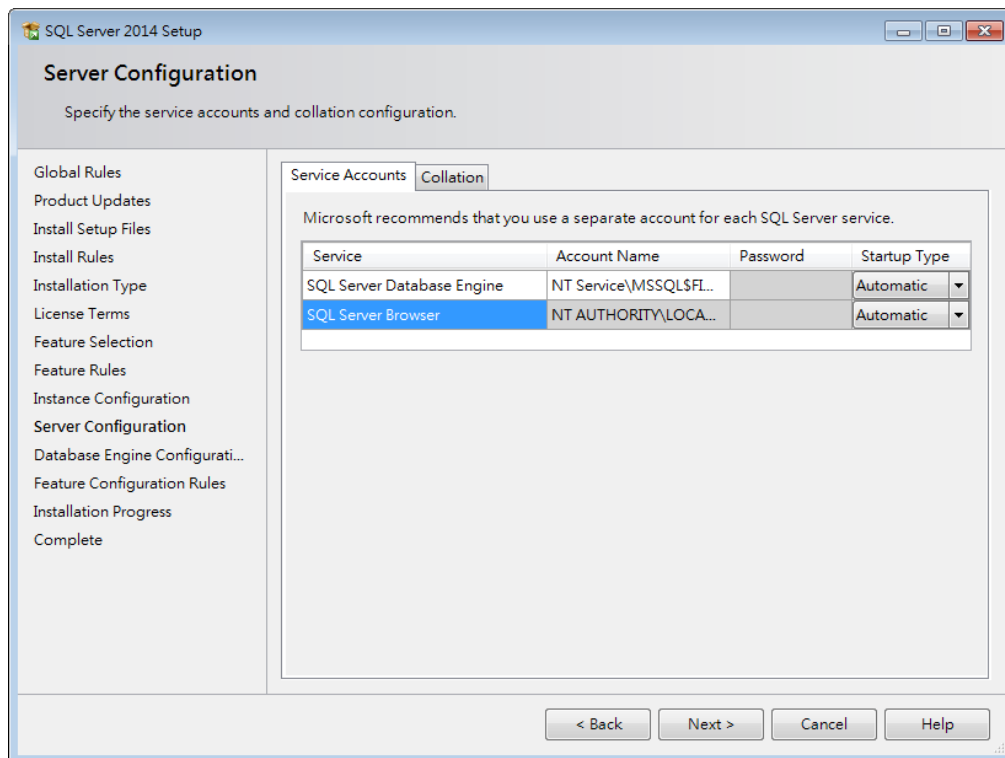


- In Instance Configuration window, new instances can be installed. Running multiple SQL Servers on the same computer needs multiple instances.

Every new instance should start from executing SETUP.EXE. The default name of the instance is MSSQLSERVER.

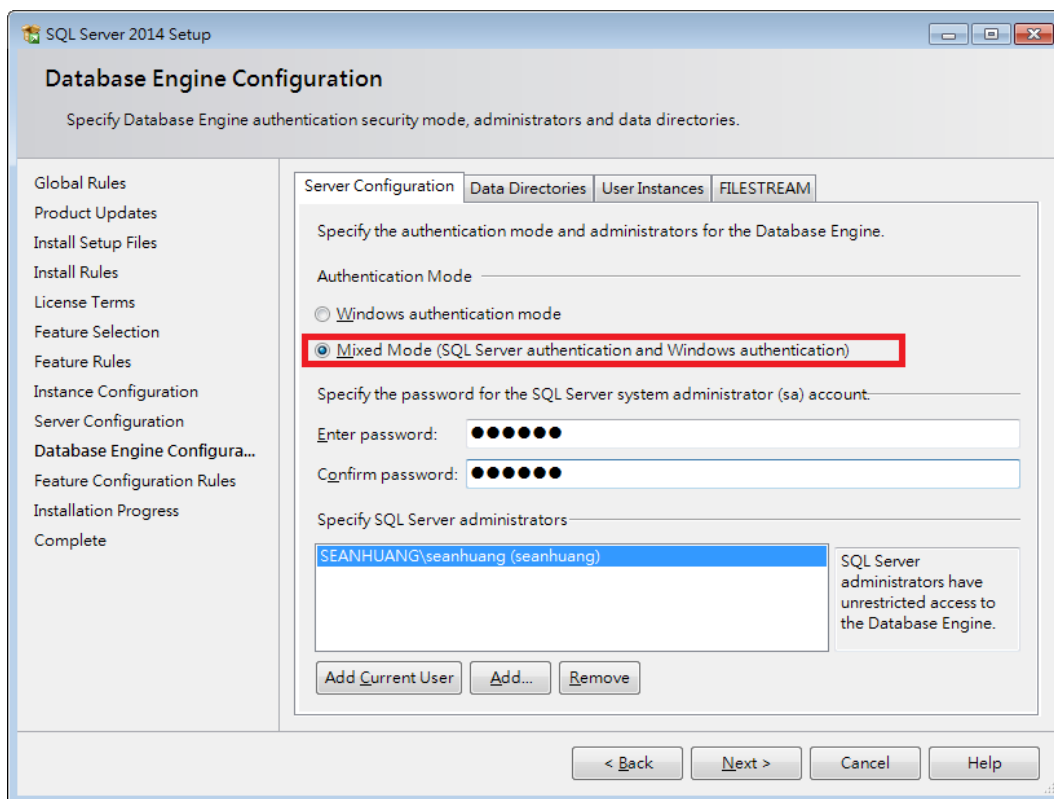


8. In Server Configuration window select [Automatic] for both SQL Server Database Engine and SQL Server Browser.



9. Select [Mixed Mode] in Database Engine Configuration window and enter

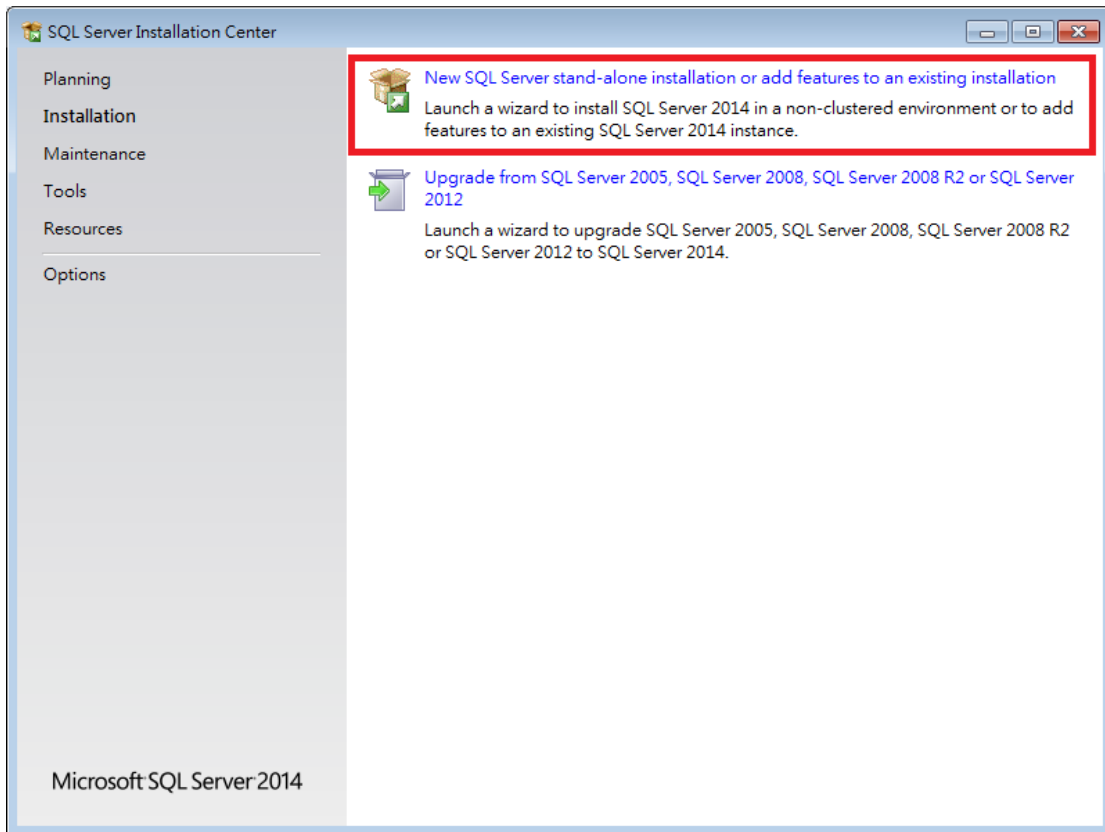
password.



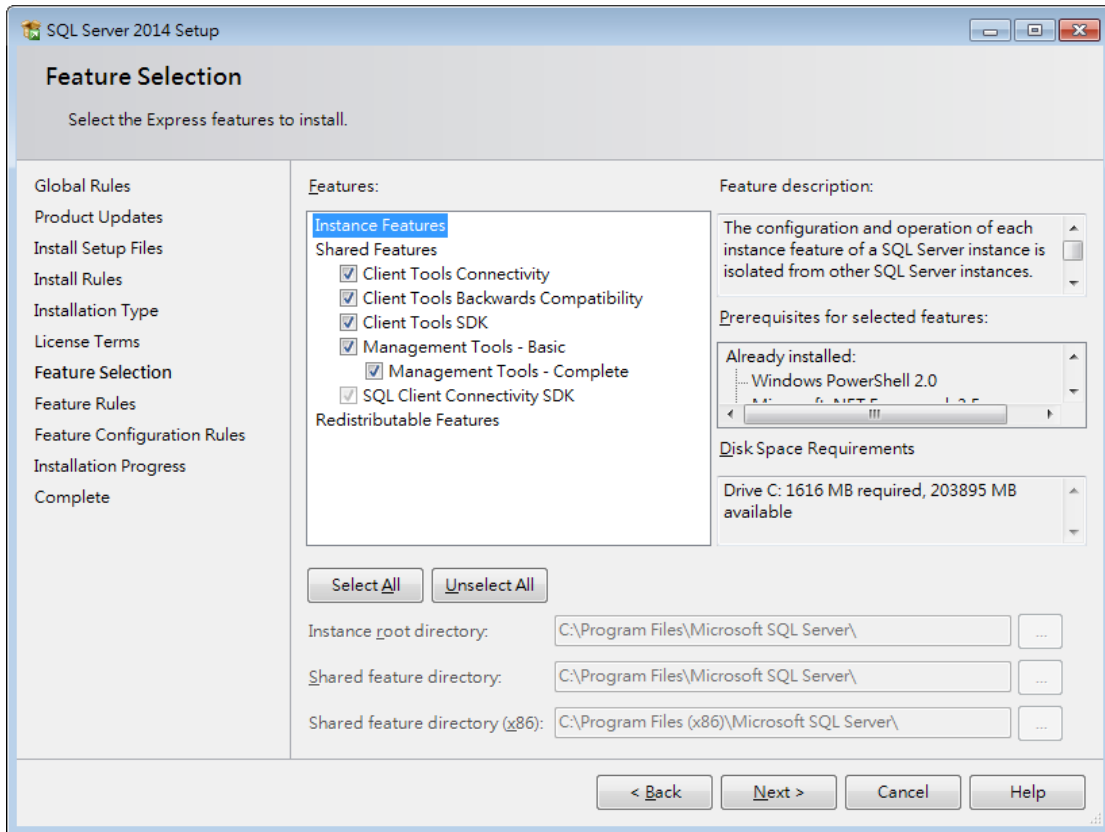
10. Install and run “MgmtStudio 64 BIT\SQLManagementStudio_x64_ENU.exe” file, a “SQLManagementStudio_x64_ENU” folder will be generated. Run “SETUP.EXE” file in this folder to start installing.
If the OS of your PC is Windows 7 32BIT x86, please install “MgmtStudio 32 BIT\SQLManagementStudio_x86_ENU.exe”.



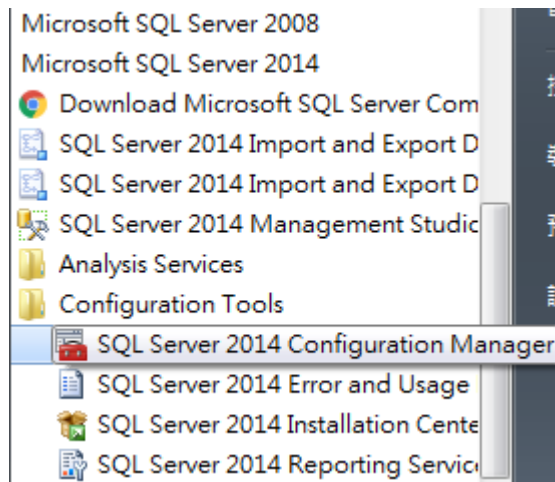
11. Click [New SQL Server stand-alone installation or add features to an existing installation].



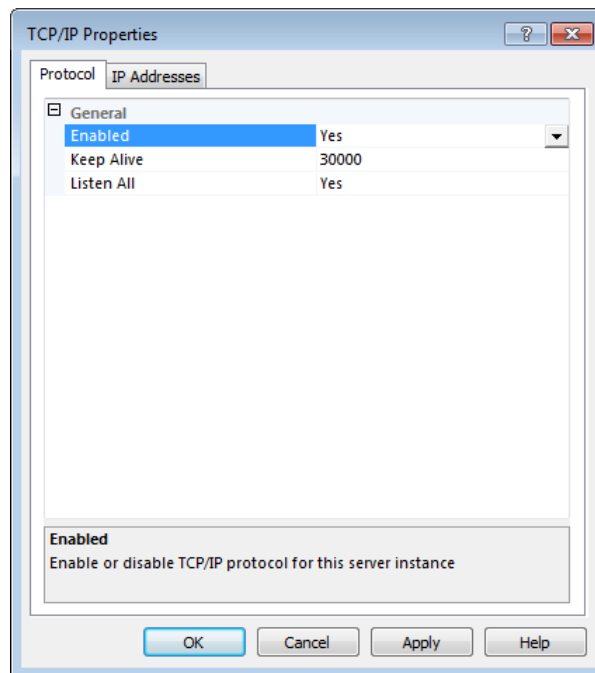
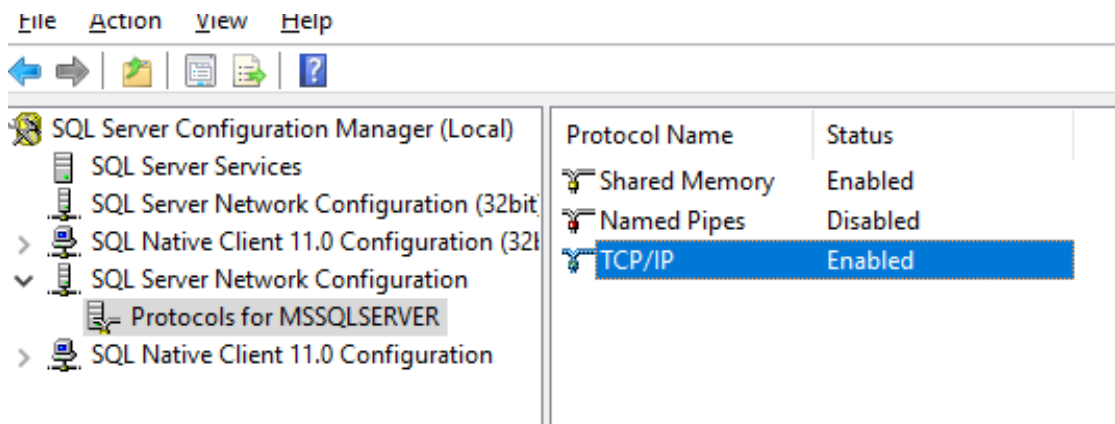
12. Use default settings in Feature Selection window.



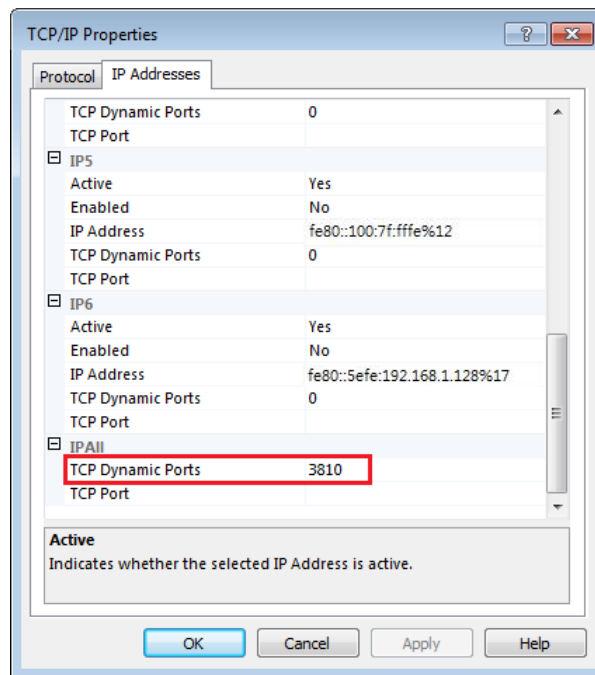
13. When finish installing, open “SQL Server Configuration Manager”.



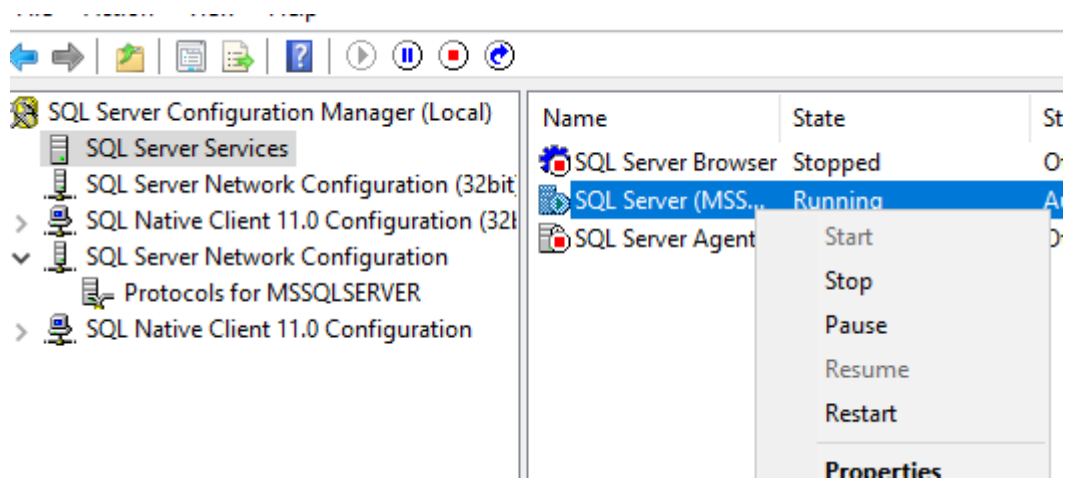
14. Under “SQL Server Network Configuration”, enable TCP/IP.



15. SQL Server port number can be found in IP Addresses tab.



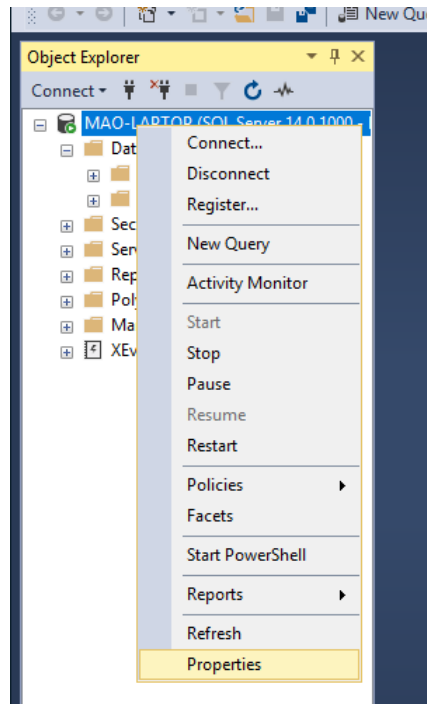
16. Under “SQL Server Services”, right-click on “SQL Server” and then click [Restart].



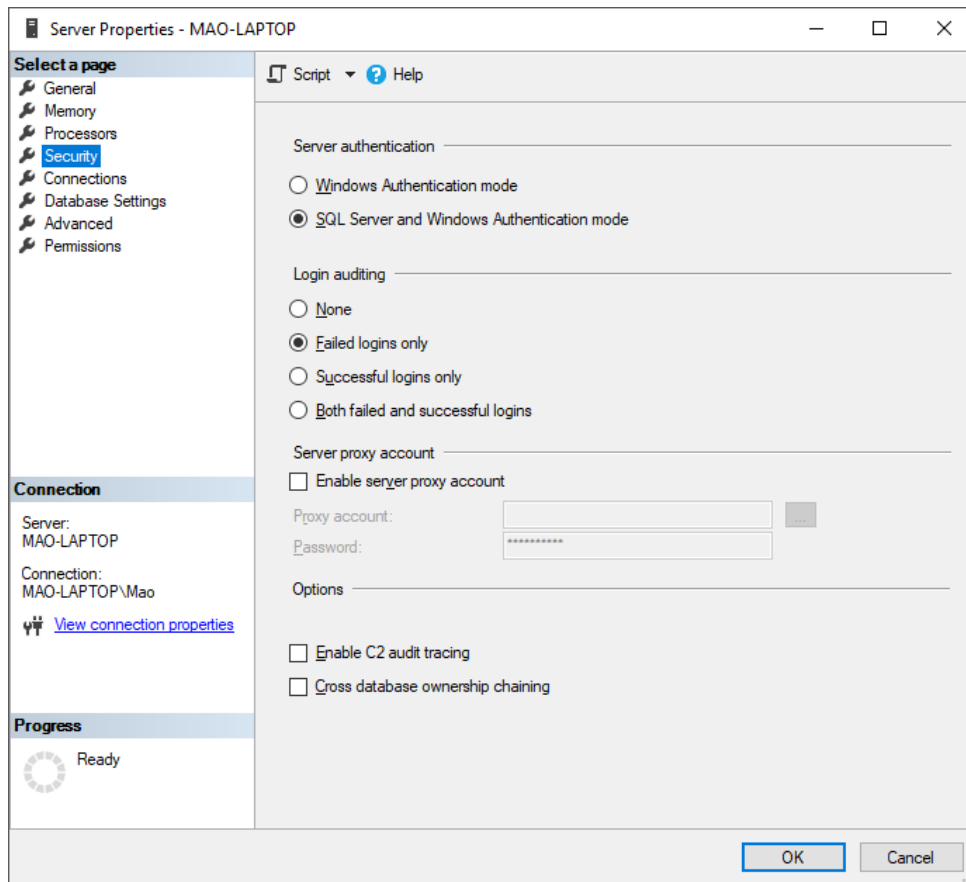
3. Building Database

After installing MS SQL, a Database must be created in MS SQL for synchronizing HMI historical data to the database with the same name.

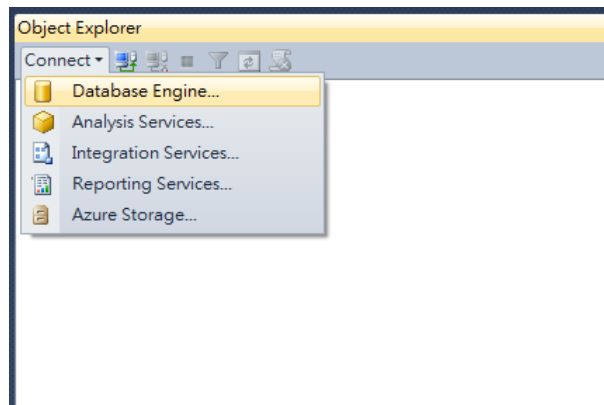
1. Launch Microsoft SQL Server Manage Studio (SSMS). Right-click on the server and select [Properties].



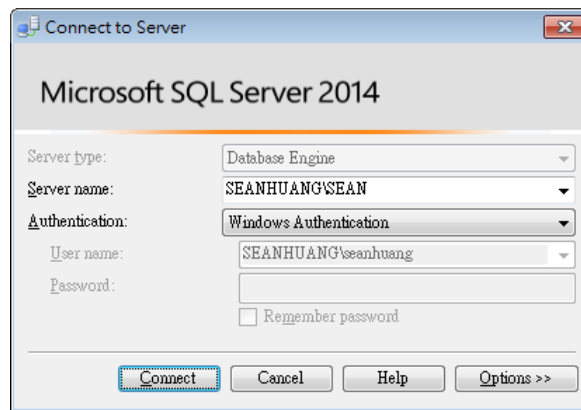
2. Under Security select [SQL Server and Windows Authentication mode] for Server Authentication.



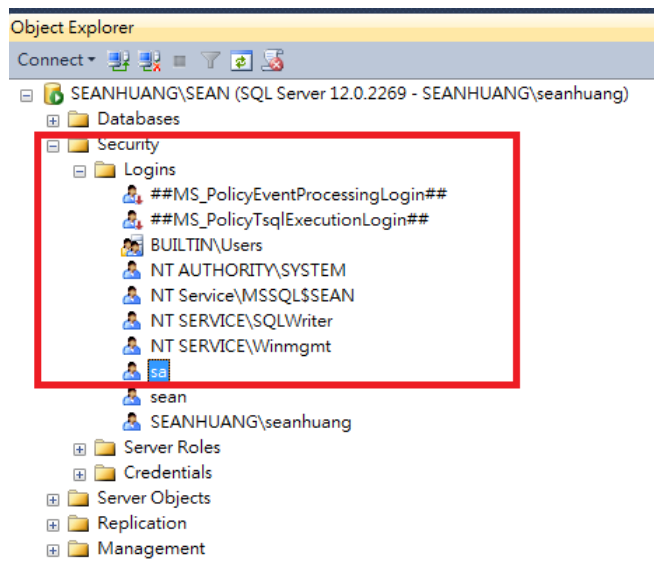
3. Select [Connect] and then select [Database Engine].



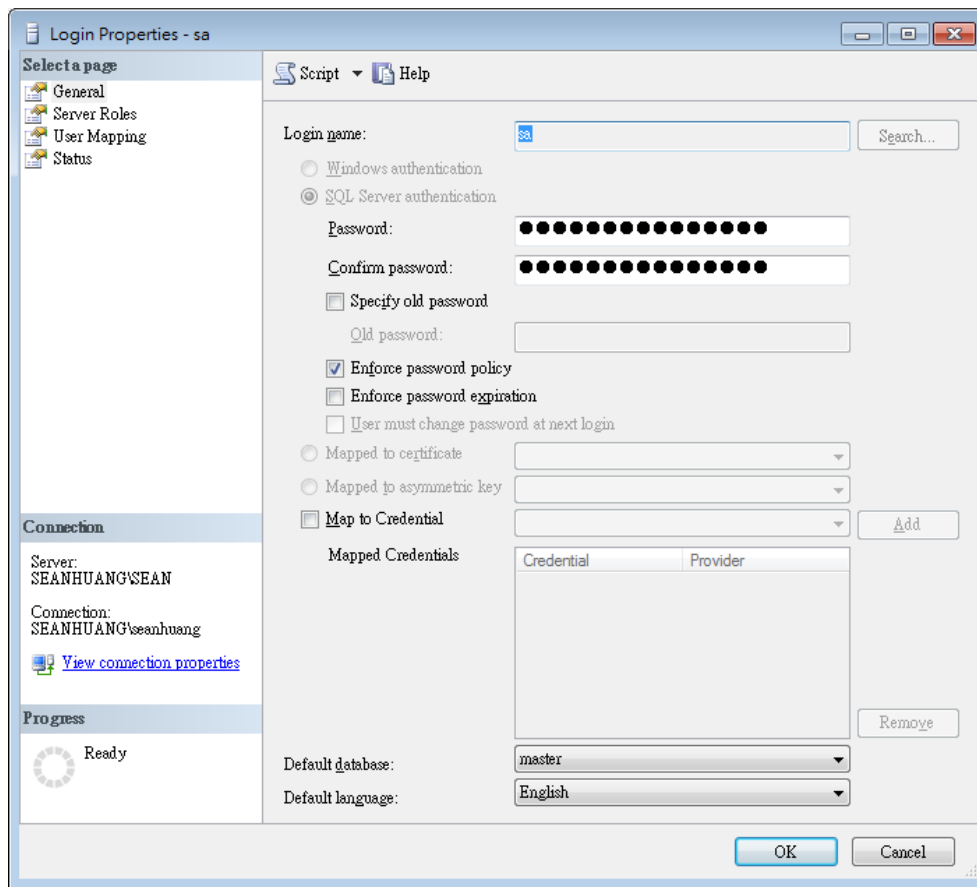
4. Select a server name. For the first login, select [Windows Authentication] and then click [Connect].



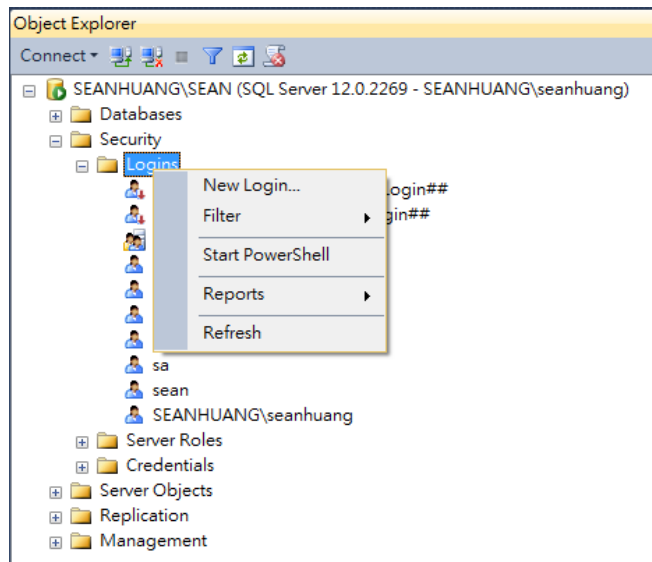
5. Double click the left mouse button to select [Security] » [Logins] » [sa].



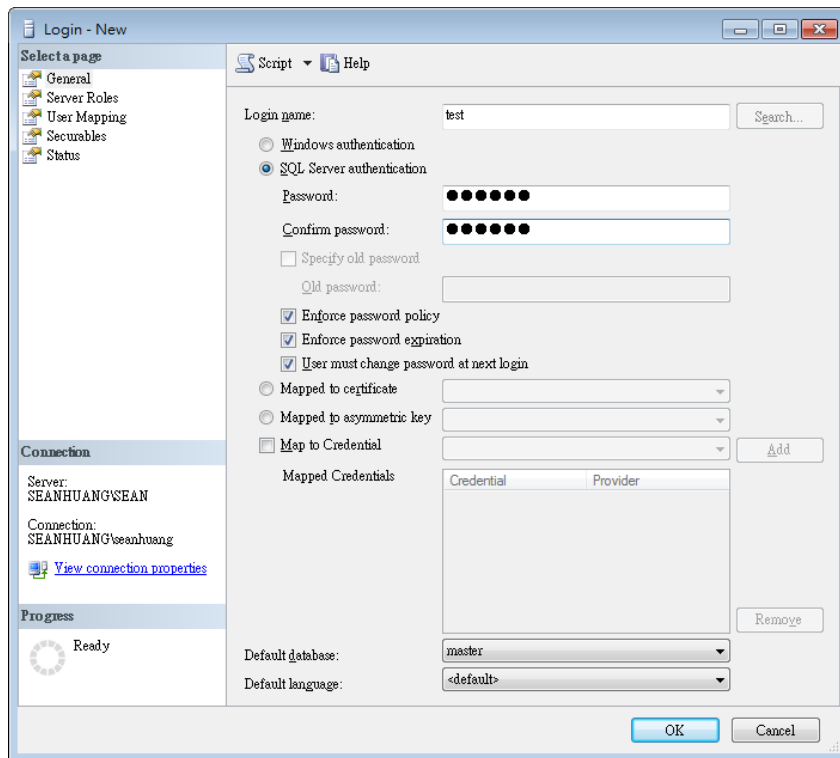
6. Enter password and then click OK. When setting Database Server in EasyBuilder Pro, the username will be “sa” and the password will be the password entered here.



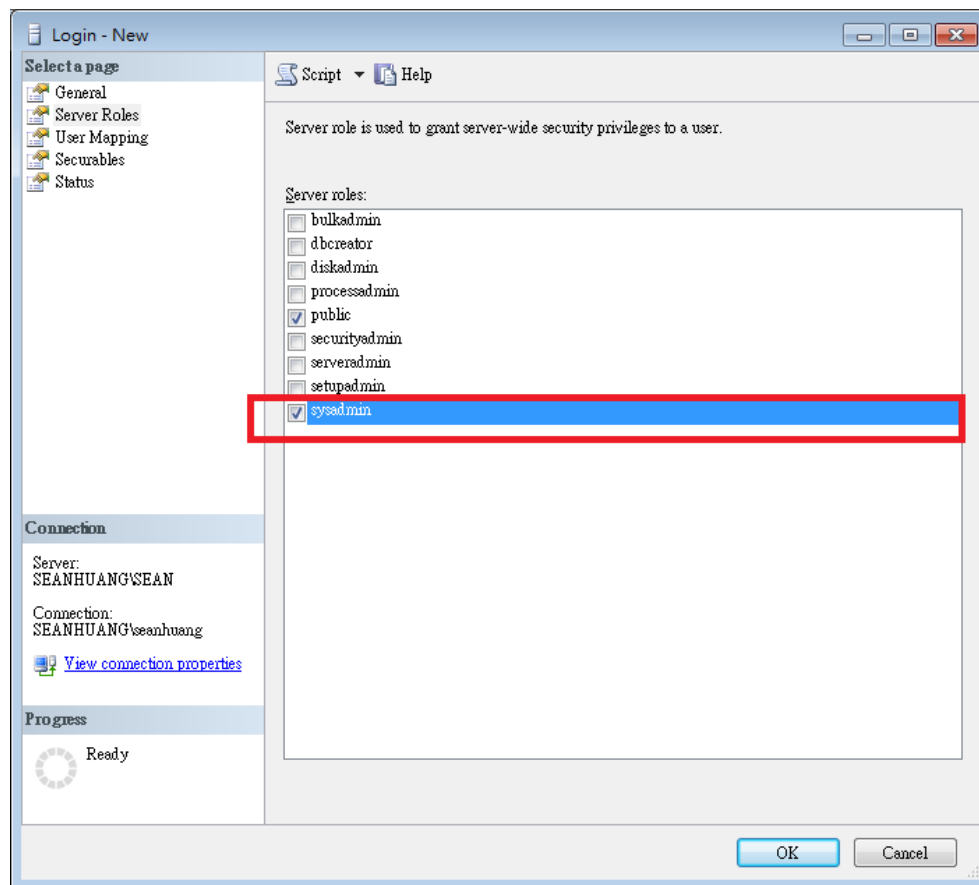
- To add new login, open [Security], right-click on [Logins], and then select [New Login].



- Enter [Login name], select [SQL Server authentication] and then enter the password.



9. Select [sysadmin] in [Server roles].

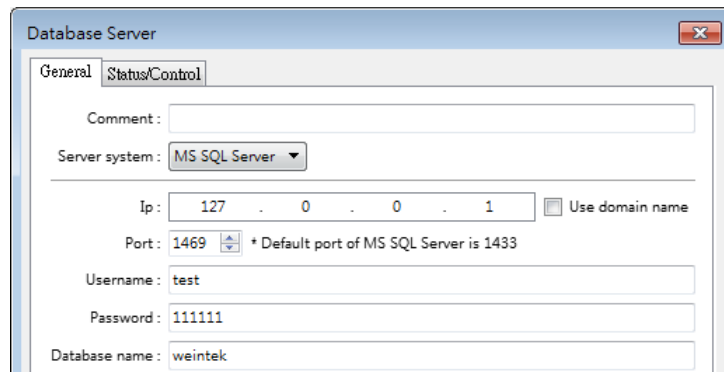


10. Click [OK] when finish setting.

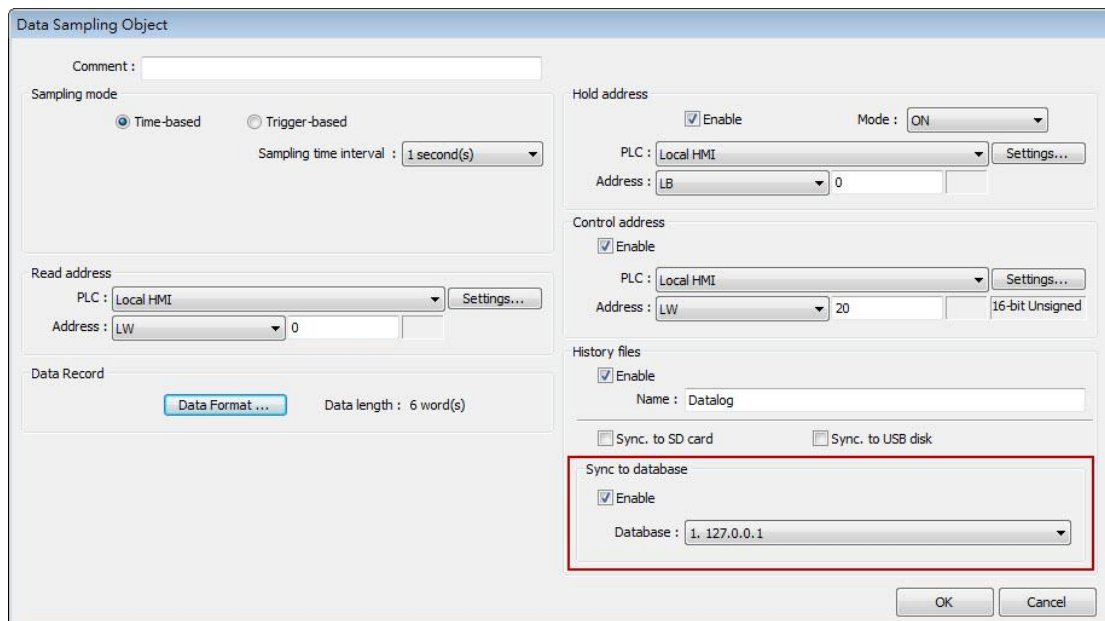
4. Designing Project File

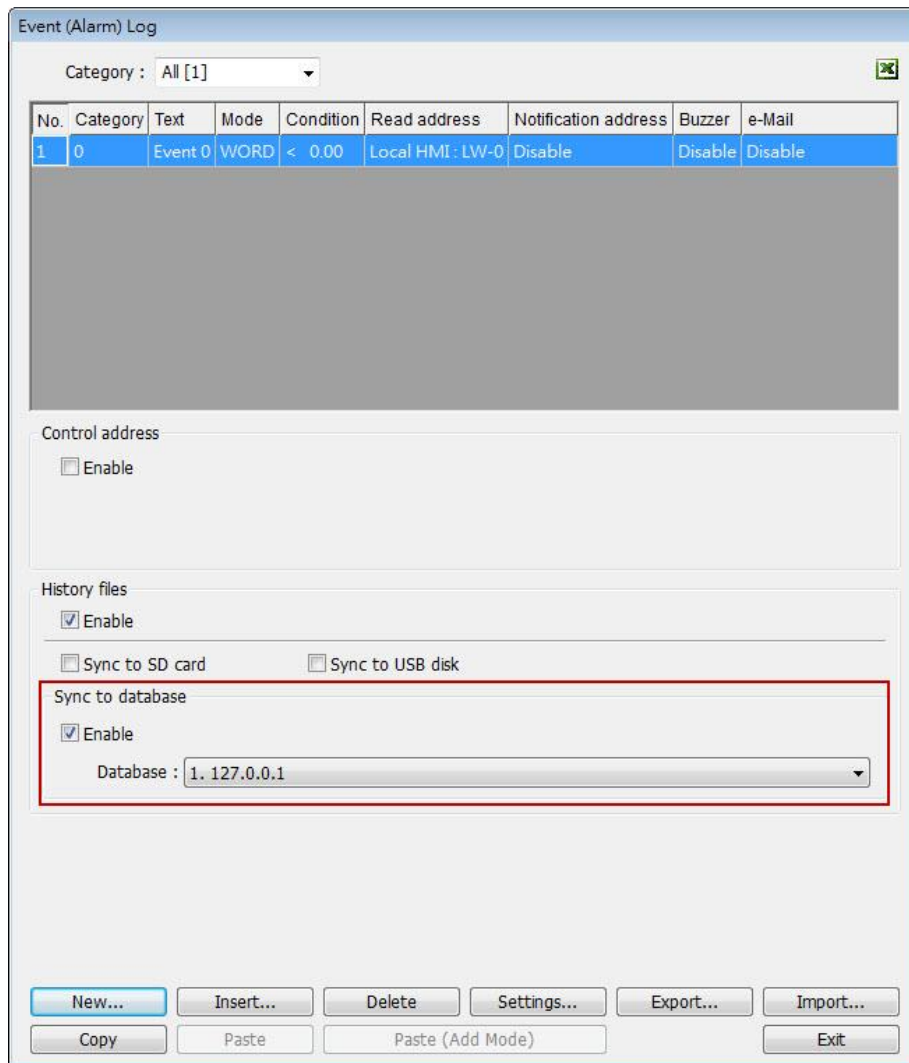
This chapter goes through the configuration in EasyBuilder Pro.

1. In EasyBuilder Pro main menu click [Objects] » [Database Server].
2. In General tab set the Database Server parameters. The default port number for MS SQL is 1433. If connecting with this port number is not possible, please find the correct port number by referring to the steps in Chapter 2 in this manual.



3. In Address tab set Status Address and Control Address. The status addresses can display the connection status with MS SQL server on HMI, and the control addresses can be used to change connection parameters dynamically on HMI.
4. Select [Sync to database] for both Data Sampling object and Event Log object, to synchronize the historical data to the Database Server.





Note: The data will be synchronized to MS SQL server only when the number of data log / event log records reaches 10000. To start synchronization manually, please select [Enable] check box in the Control Address group box in the settings window of Data Sampling / Event Log object, and then give command by entering the corresponding value in the designated address.

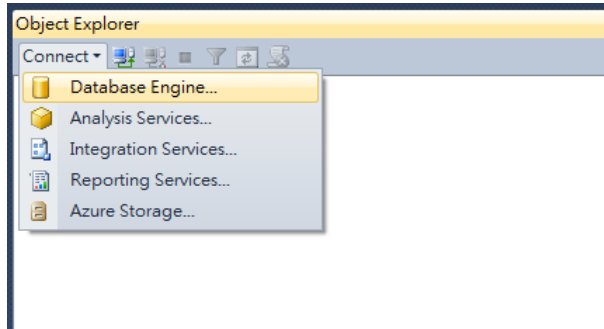
Value	Command
1	Clear data in cMT HMI.
2	Synchronize data to the external device.
3	Synchronize data to the external device and then clear data in cMT HMI.

Please see EasyBuilder Pro User Manual Chapter 7 Event Log and Chapter 8 Data Sampling for more details on the synchronization rules of historical data.

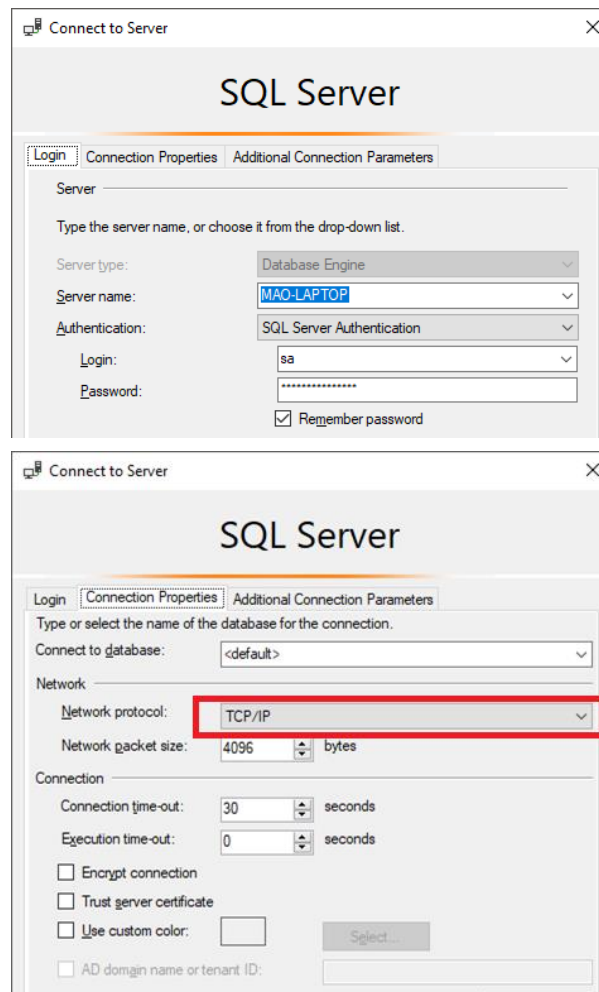
5. SQL Query

This chapter explains how to use SQL Query.

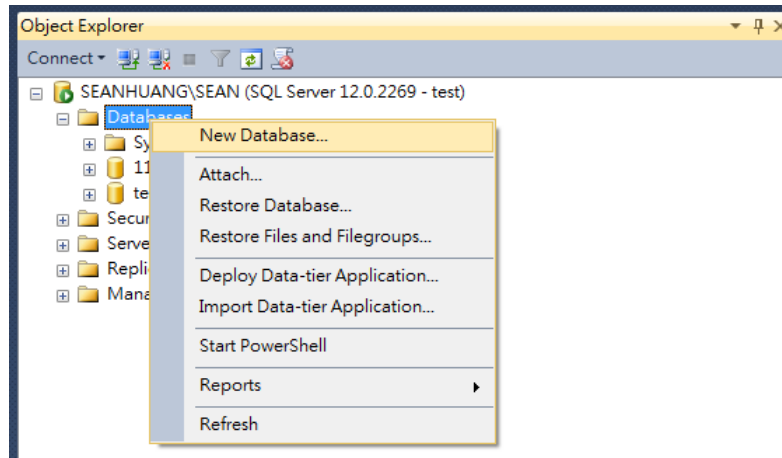
1. Launch Microsoft SQL Server Manage Studio(SSMS). Select [Connect] » [Database Engine].



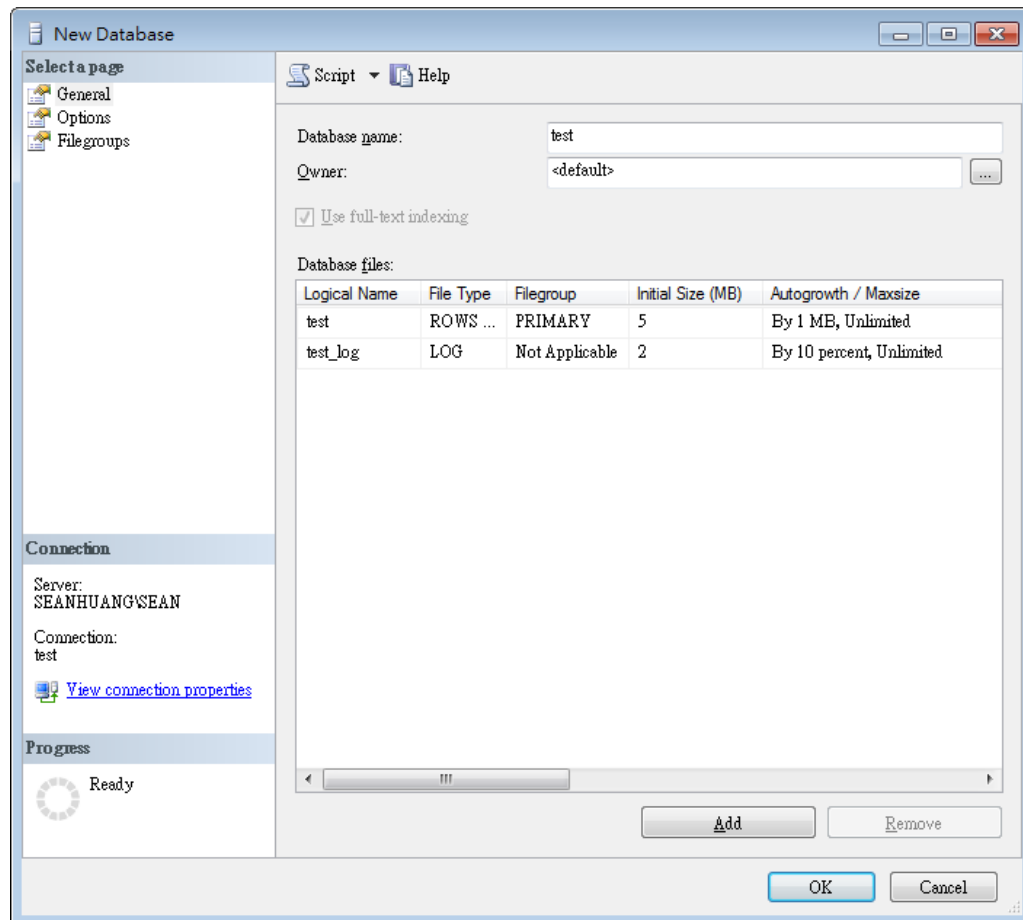
2. Select a Server Name, and select [SQL Server Authentication]. Enter Login Name and Password. (Login name can be “sa” as configured in the preceding chapter: 3: Building Database, or any user-defined name.) In Connection Properties tag select TCP/IP for [Network protocol], and then click [Connect].



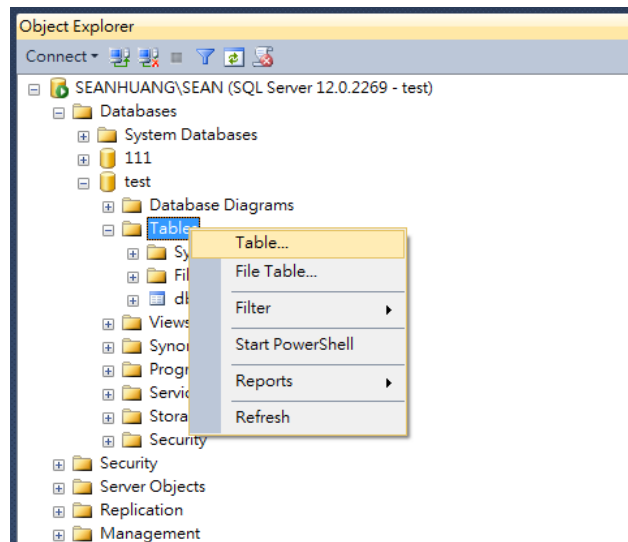
- Right-click on [Database] and then select [New Database].



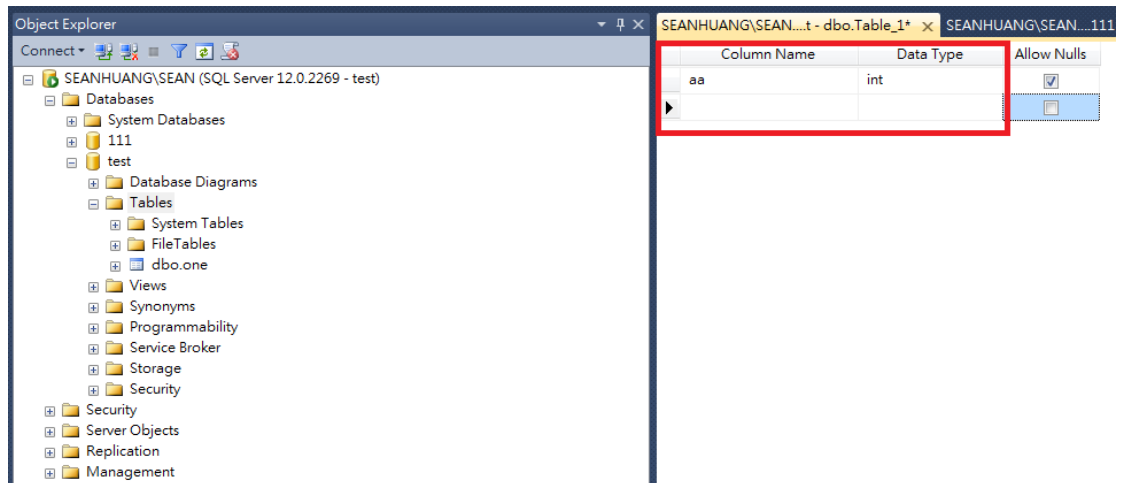
- Enter a [Database name], click [OK]. The Database Name is defined in [Database Server] » [Database name] in EasyBuilder Pro.



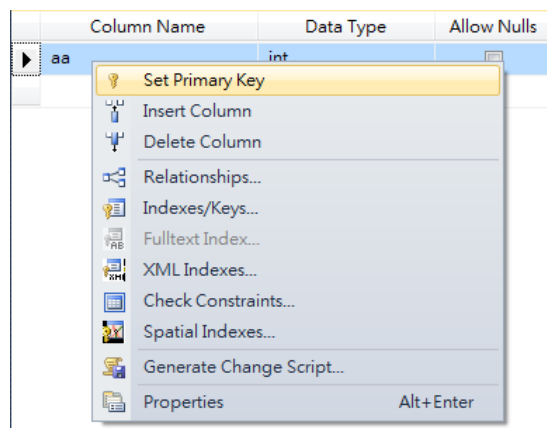
- Right-click on [Tables] under the new database, and then click [Table...] or [Add Table].



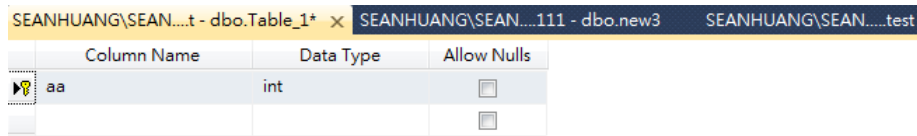
6. Create [Column Name] and [Data Type].



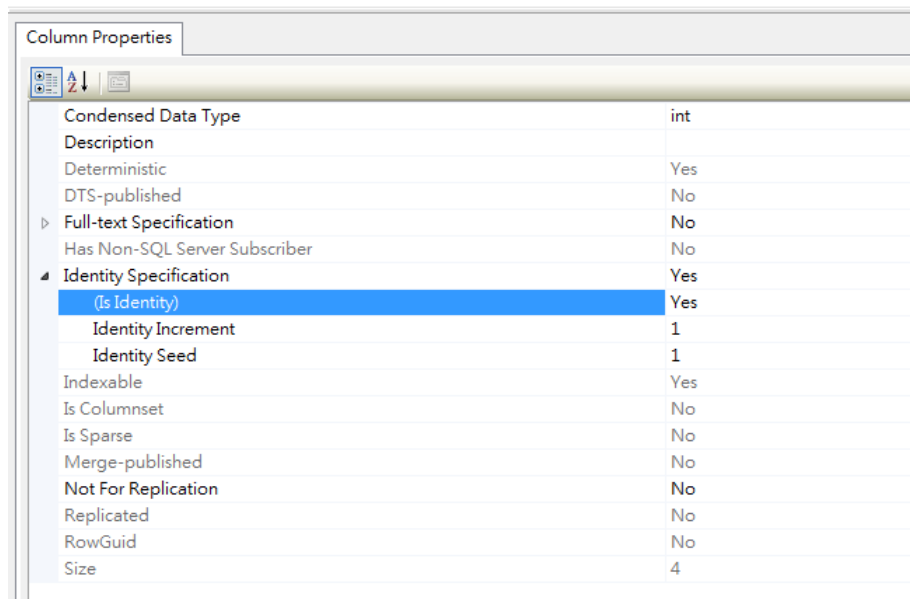
7. Right-click on the column name to be set as Primary Key and then select [Set Primary Key]. Setting Primary Key is necessary for the SQL Query General Setting in EasyBuilder Pro. For Advanced Mode, this step can be skipped.



8. Set Yes for [Column Properties] » [Identity Specification] » [Is Identity].
(This step can be skipped for Advanced Mode)

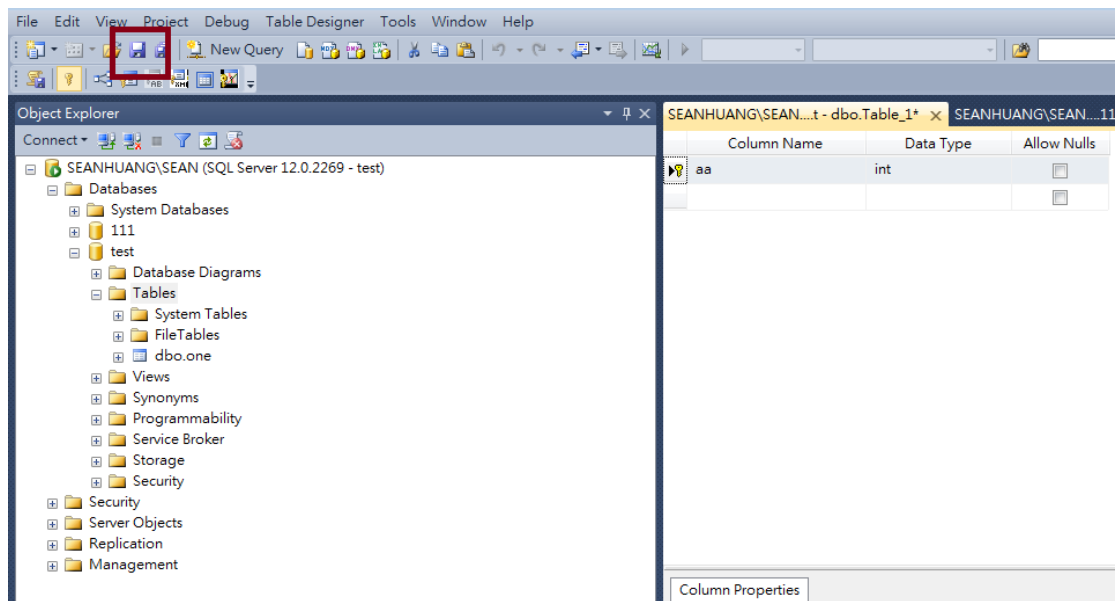


Column Name	Data Type	Allow Nulls
aa	int	<input type="checkbox"/>
		<input type="checkbox"/>

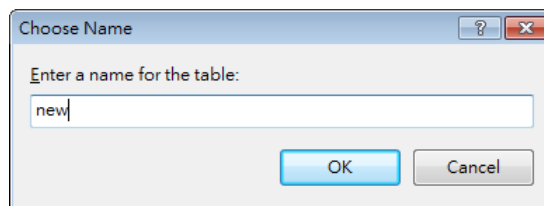


Column Properties	
Condensed Data Type	int
Description	
Deterministic	Yes
DTS-published	No
Full-text Specification	No
Has Non-SQL Server Subscriber	No
Identity Specification	Yes
(Is Identity)	Yes
Identity Increment	1
Identity Seed	1
Indexable	Yes
Is Columnset	No
Is Sparse	No
Merge-published	No
Not For Replication	No
Replicated	No
RowGuid	No
Size	4

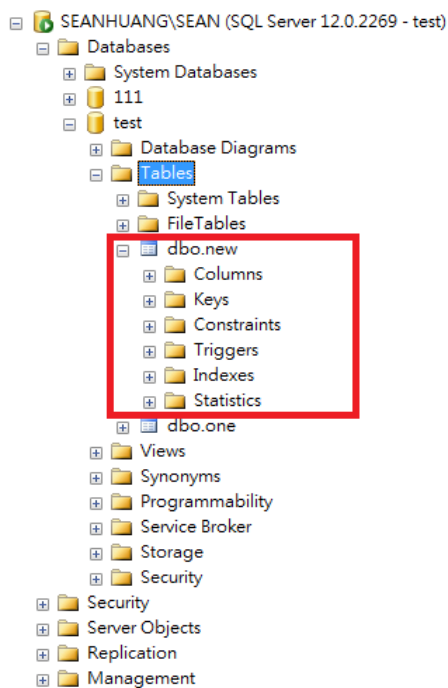
9. Click [Save].



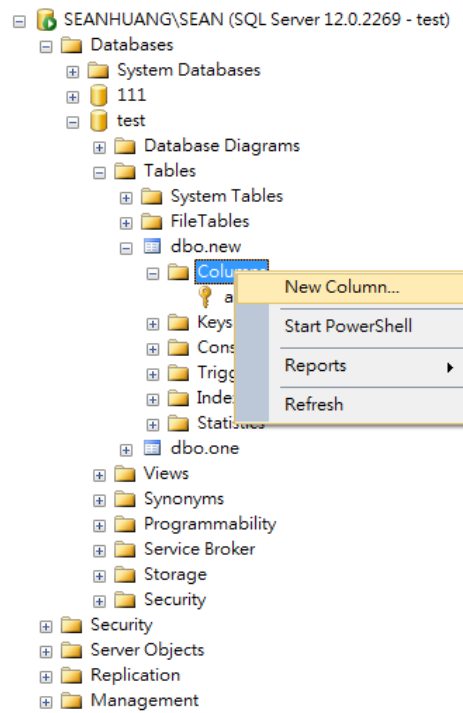
10. A dialog box for naming the table will pop up. Enter the same name as in EasyBuilder Pro » [SQL Query] » [Table name].



11. Select [Table] and then press the F5 key on the keyboard to see the added tables.



12. To change the data in the table, right-click on [Columns] and then select [New Column].



For more information on SQL Query in EasyBuilder Pro, see EasyBuilder Pro User Manual Chapter 13.44.2 SQL Query.

6. References

1. The download link of MS SQL 2014 Express:
<https://www.microsoft.com/en-us/download/details.aspx?id=42299>
2. The download link of MS SQL 2017 Express:
<https://www.microsoft.com/en-us/sql-server/sql-server-downloads>