

## Document Information

Reference	PRO-180002
Title	Installing an instance of SQL Server 2016 Express
Synopsis	Beyond just installing SQL Server 2016 Express, this document guides a user through installing SQL Server 2016 Express, backing up the DAS SQL databases, detaching the databases, copying the databases to a new server / instance, re-attaching the DAS SQL databases, updating the database format then connecting a new DAS SQL instance to the databases.
Author	David Montgomery
Creation Date	2019-Jan-08

## Revisions

Rev	Date	Who	Notes
001	2019-Jan-08	David Montgomery	Initial document

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## Microsoft SQL Server 2016 SP2 Express download

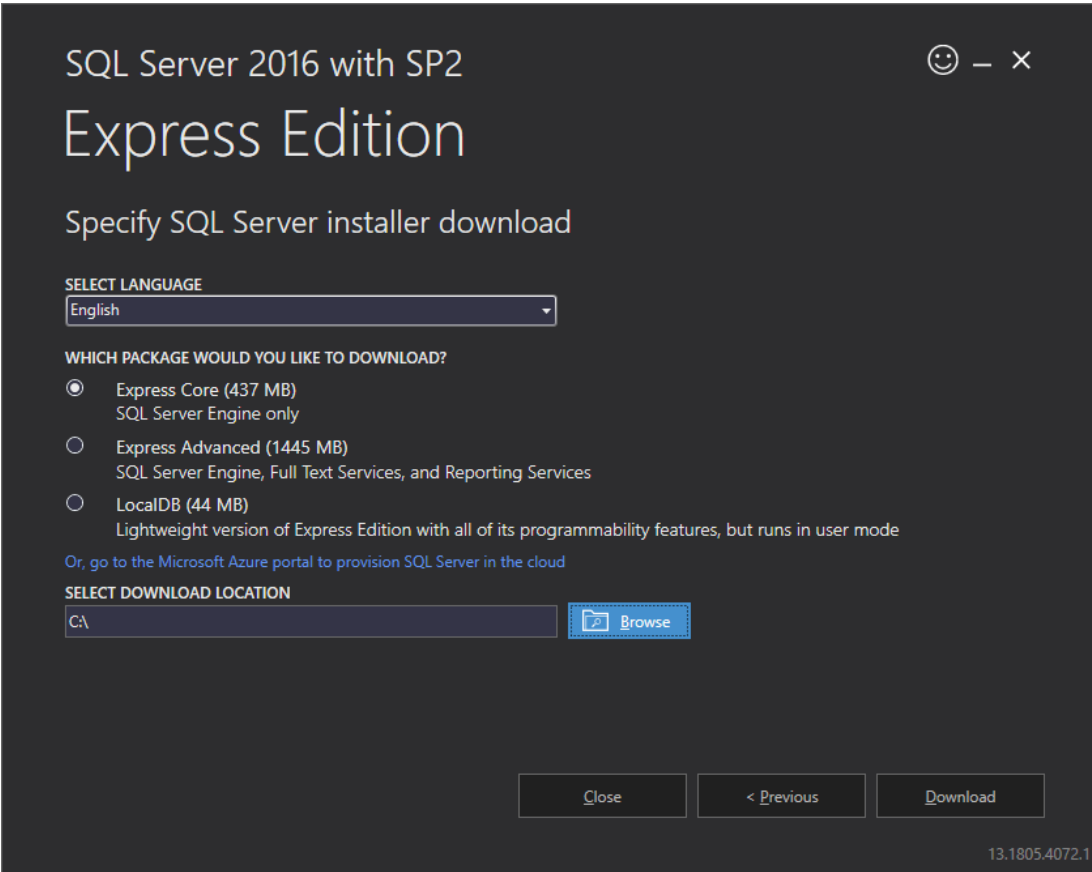
<https://www.microsoft.com/en-us/download/details.aspx?id=56840>

It downloads as an update launcher which will download the required binaries as you step through the installation wizard.

Download Media for use later



Select your download language, package (Express Core) and download location



SQL Server 2016 with SP2  
Express Edition

Specify SQL Server installer download

**SELECT LANGUAGE**  
English

**WHICH PACKAGE WOULD YOU LIKE TO DOWNLOAD?**

- ☒ Express Core (437 MB)  
SQL Server Engine only
- ☐ Express Advanced (1445 MB)  
SQL Server Engine, Full Text Services, and Reporting Services
- ☐ LocalDB (44 MB)  
Lightweight version of Express Edition with all of its programmability features, but runs in user mode

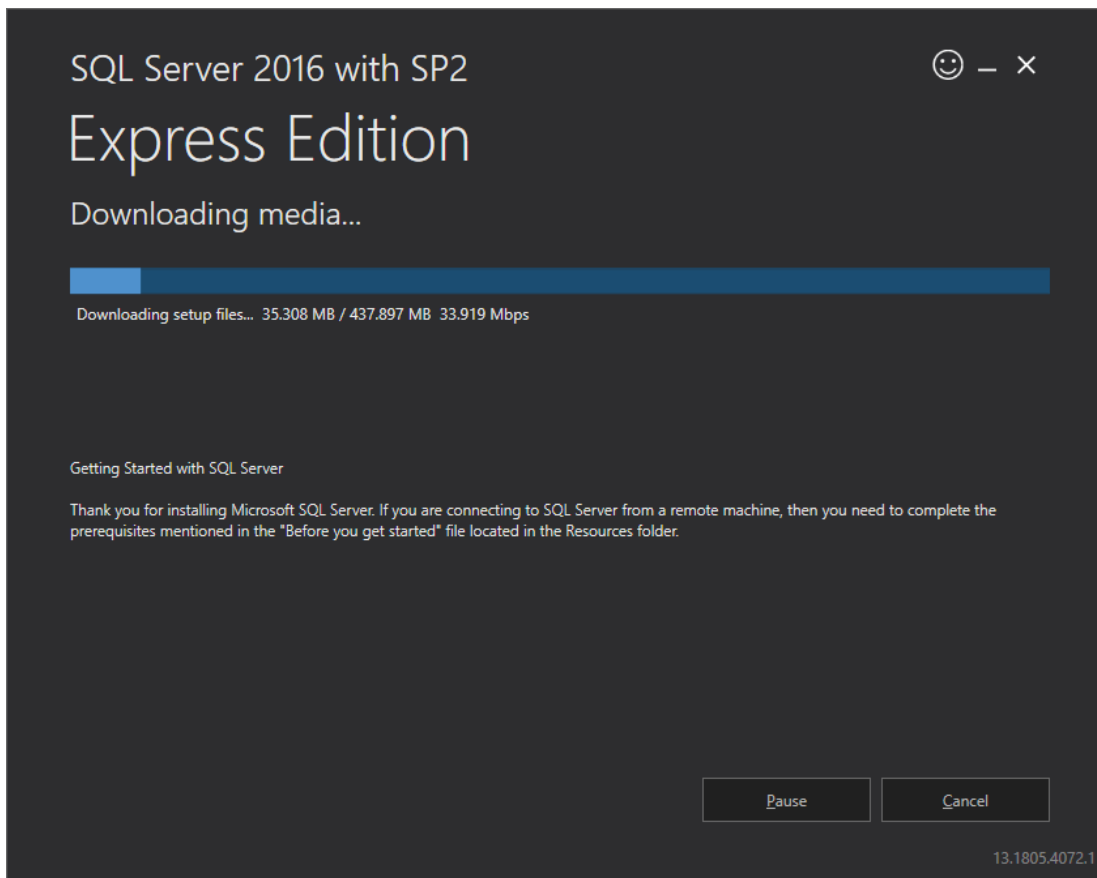
[Or, go to the Microsoft Azure portal to provision SQL Server in the cloud](#)

**SELECT DOWNLOAD LOCATION**  
C:\ Browse

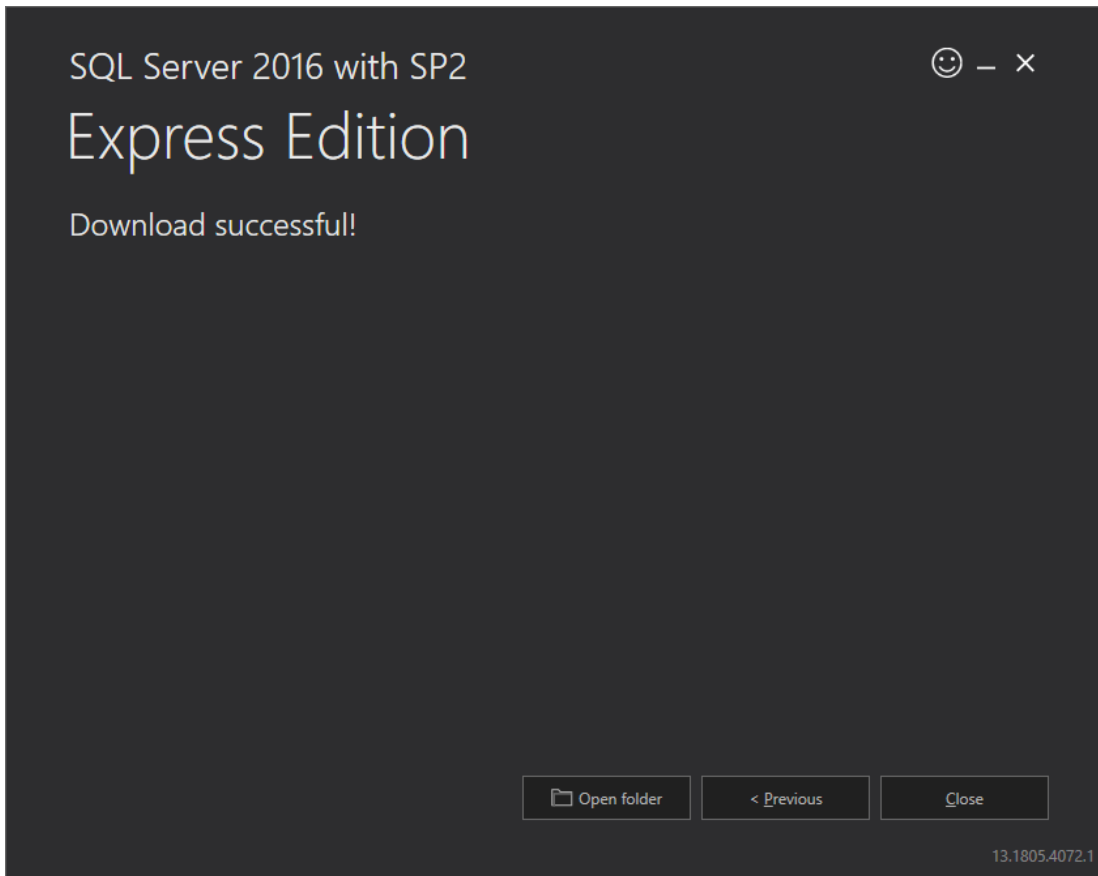
Close < Previous Download

13.1805.4072.1

Then click Download

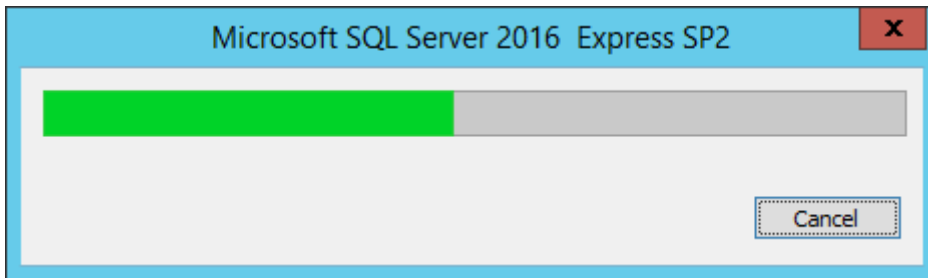


Confirmation that download is successful

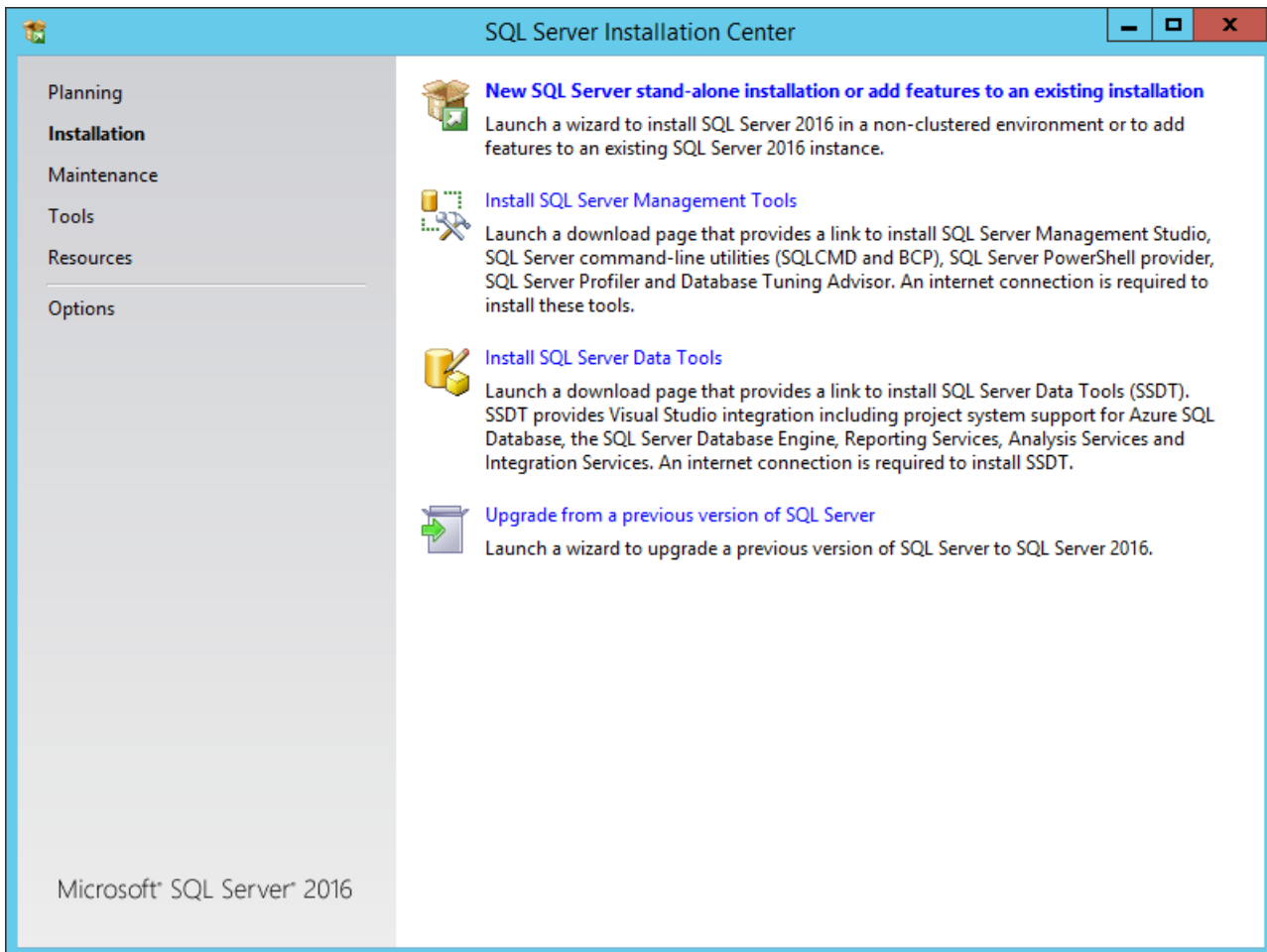


## SQL Server 2016 Express Installation

When you're ready to begin the installation, click Open Folder then run the SQL Express installer as Admin. You will be asked where you would like to unpack your installation files to:



Once completed, the SQL Server Installation Center will load.

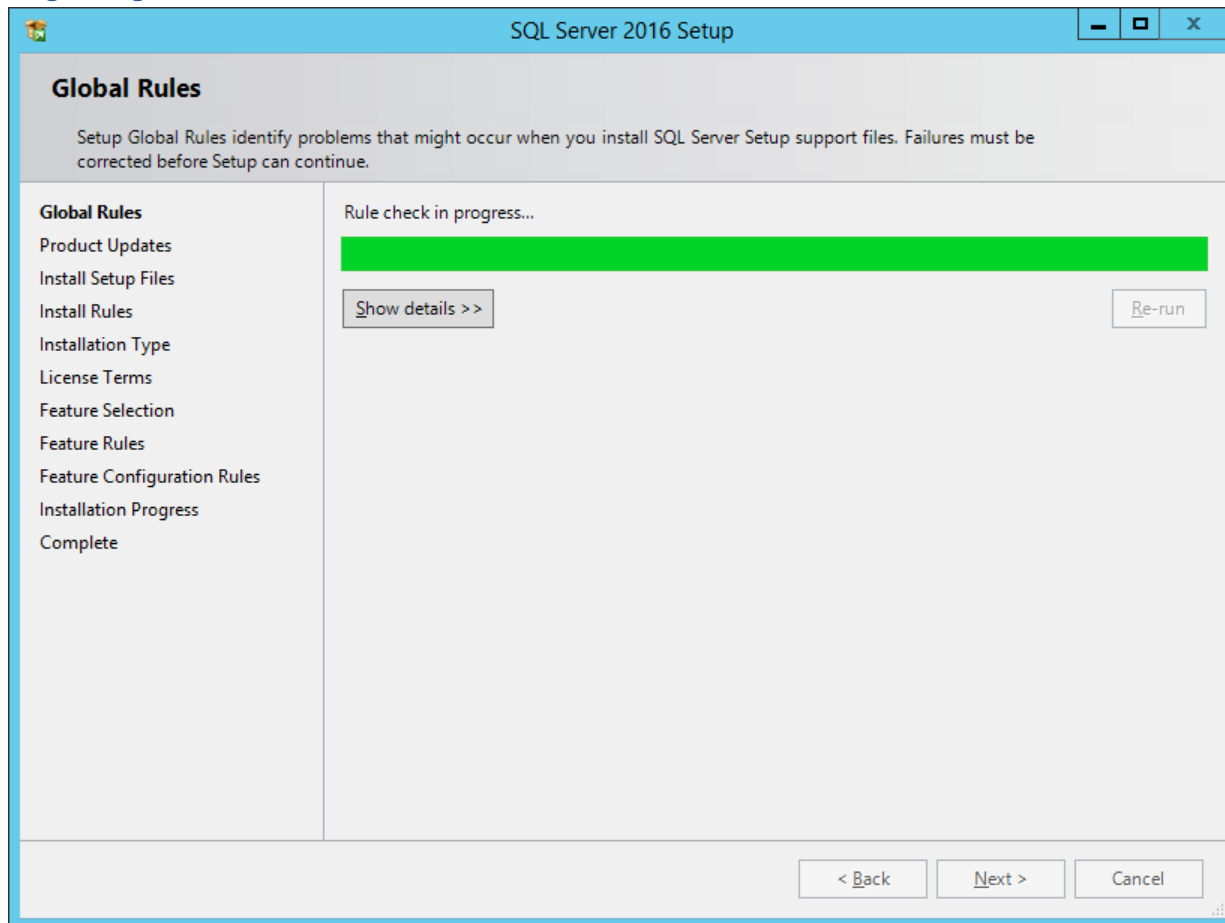


You now have the option to either:

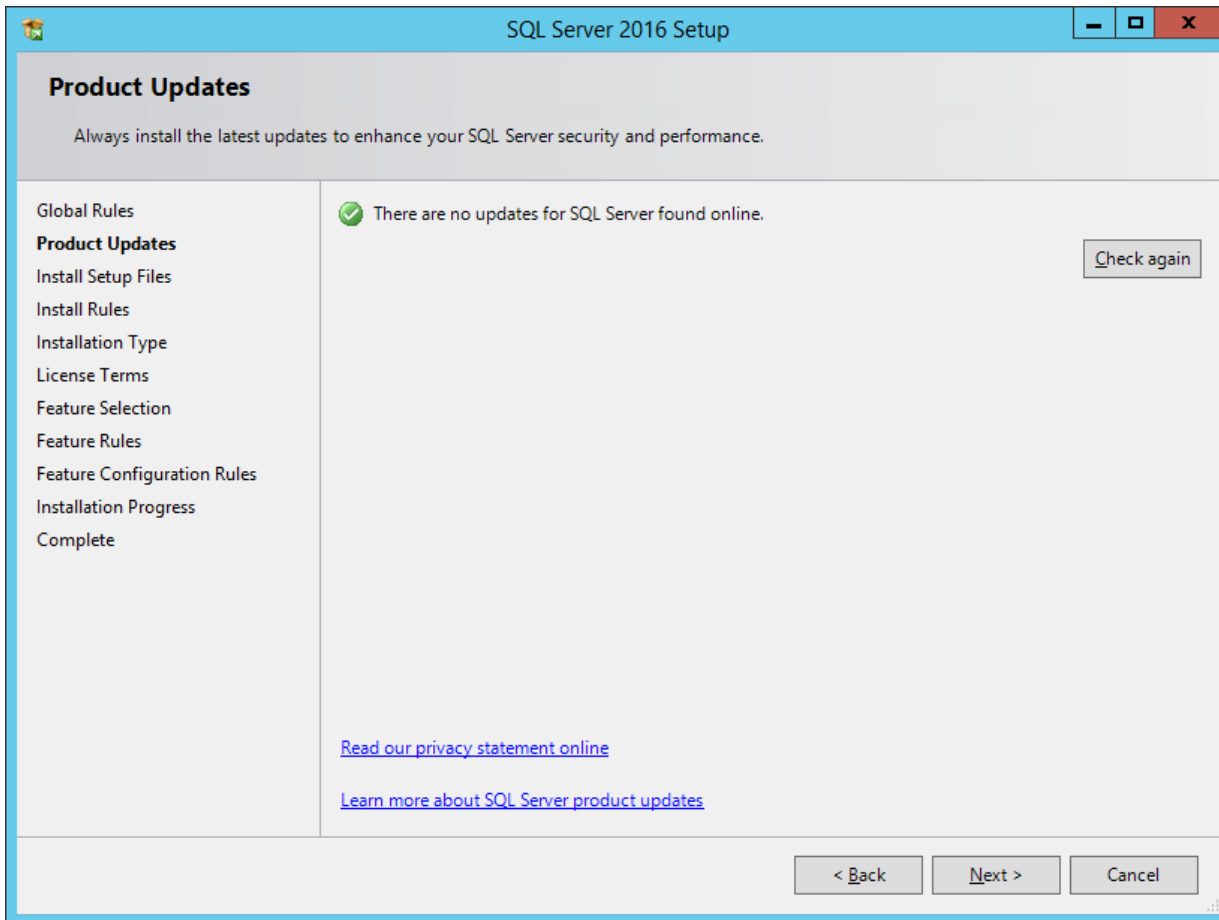
- Create a new stand alone 2016 instance OR
- Upgrade an existing instance

Ultimately this choice is down to your own organizational preferences but from a DAS SQL point of view, we recommend leaving your existing instance alone and creating a new stand alone 2016 instance. At the end of the process, we can help transfer your files from your existing older SQL Server Express instance and then convert the database for the new SQL version by running a SQL script.

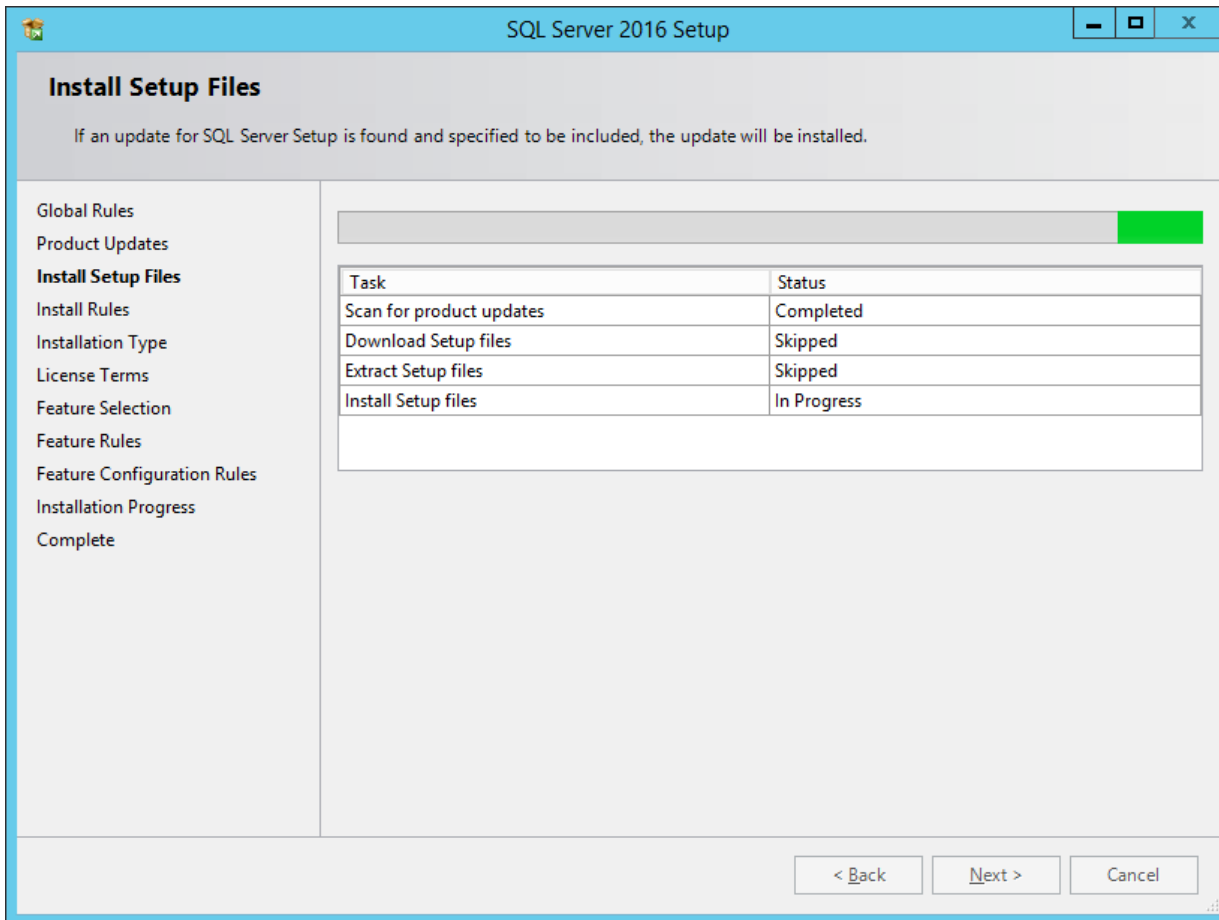
## Beginning the Installation

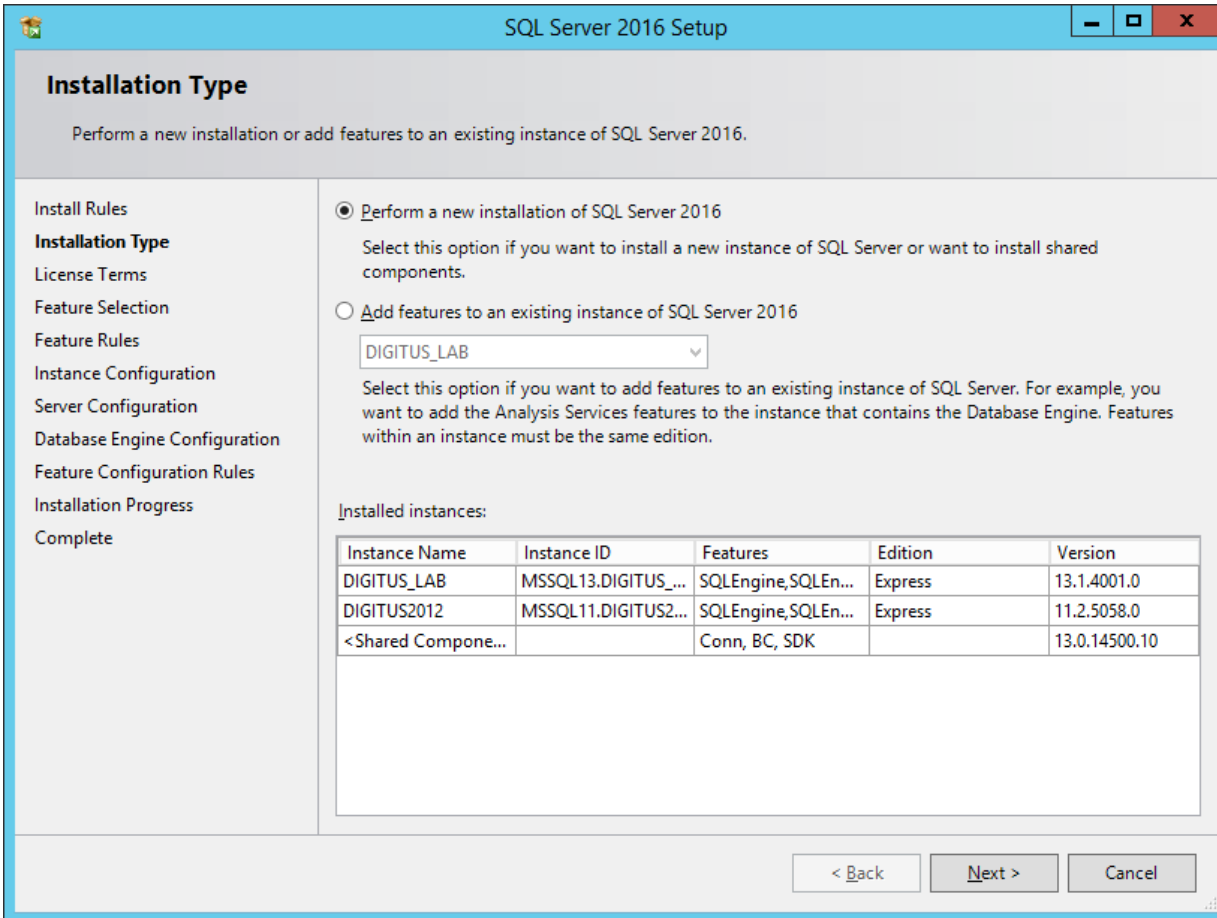






Click Next to begin the installation





**SQL Server 2016 Setup**

### Installation Type

Perform a new installation or add features to an existing instance of SQL Server 2016.

☒ **Perform a new installation of SQL Server 2016**  
 Select this option if you want to install a new instance of SQL Server or want to install shared components.

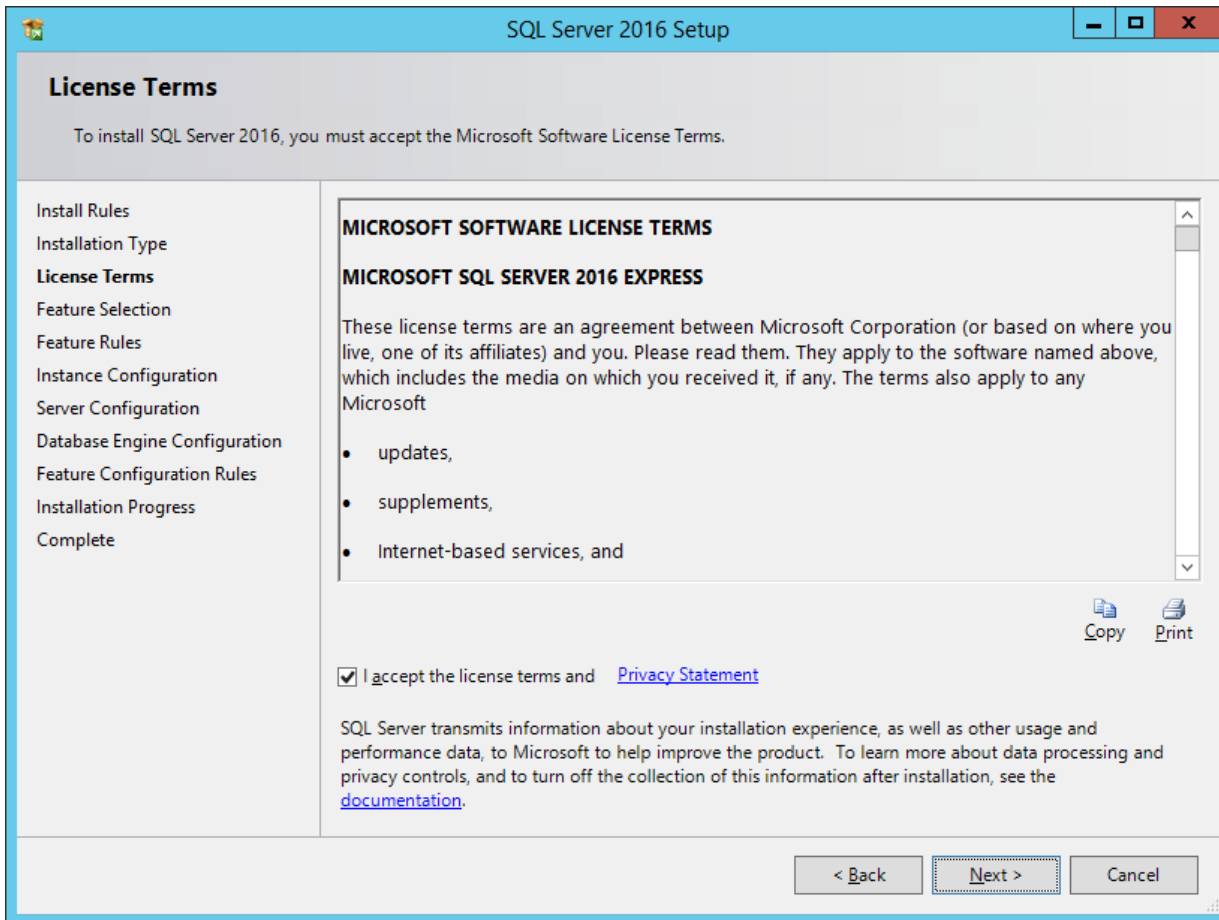
☐ **Add features to an existing instance of SQL Server 2016**  
 DIGITUS\_LAB  
 Select this option if you want to add features to an existing instance of SQL Server. For example, you want to add the Analysis Services features to the instance that contains the Database Engine. Features within an instance must be the same edition.

Installed instances:

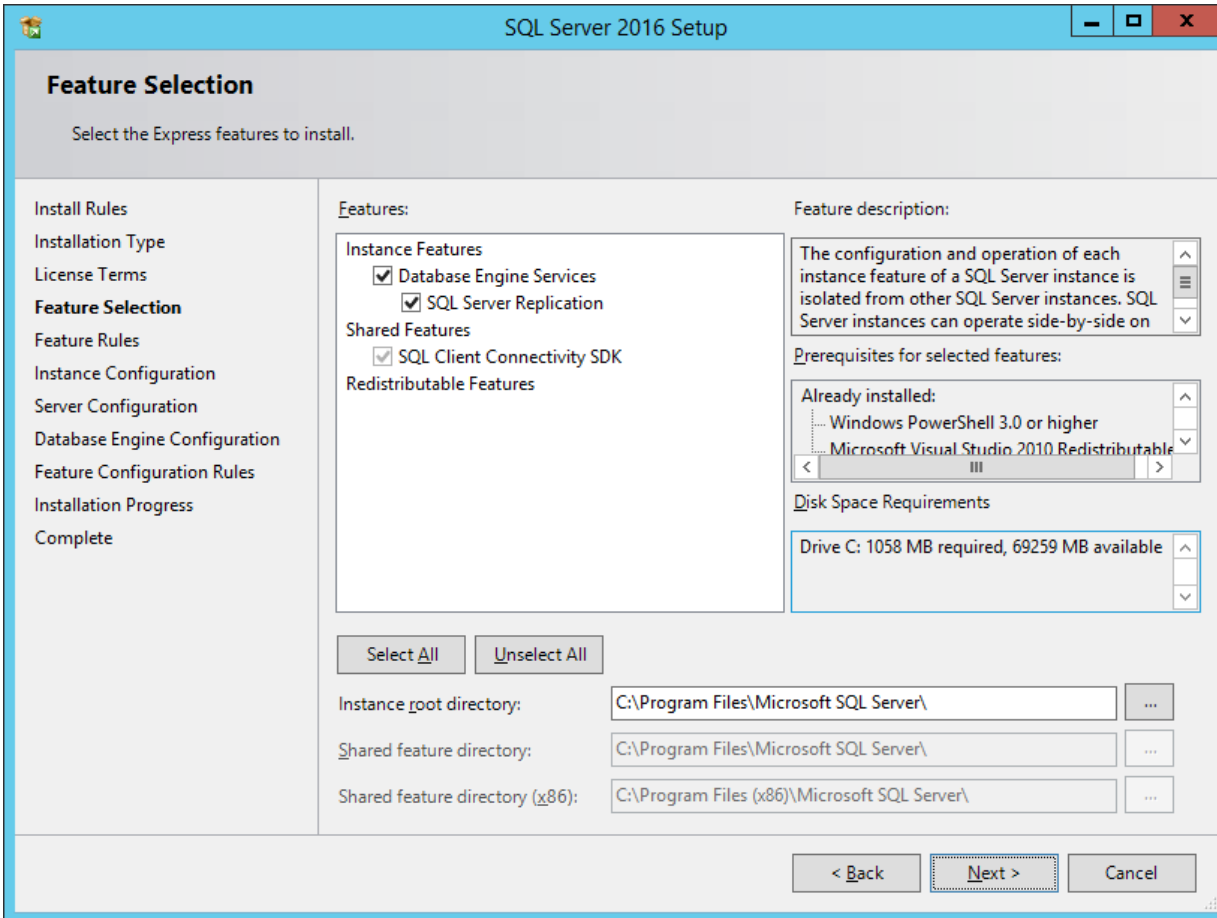
Instance Name	Instance ID	Features	Edition	Version
DIGITUS_LAB	MSSQL13.DIGITUS_...	SQLEngine, SQLEn...	Express	13.1.4001.0
DIGITUS2012	MSSQL11.DIGITUS2...	SQLEngine, SQLEn...	Express	11.2.5058.0
<Shared Compone...		Conn, BC, SDK		13.0.14500.10

< Back    Next >    Cancel

We are going to install a new SQL Server 2016 Express instance – notice the 2 x existing instances (1 x SQL Server 2016 Express called DIGITUS\_LAB and 1 x SQL Server 2012 Express called DIGITUS2012). Click Next



Accept the license terms and click Next



**SQL Server 2016 Setup**

**Feature Selection**

Select the Express features to install.

**Install Rules**

Installation Type

License Terms

**Feature Selection**

Feature Rules

Instance Configuration

Server Configuration

Database Engine Configuration

Feature Configuration Rules

Installation Progress

Complete

**Features:**

Instance Features

- ☒ Database Engine Services
- ☒ SQL Server Replication

Shared Features

- ☒ SQL Client Connectivity SDK

Redistributable Features

**Feature description:**

The configuration and operation of each instance feature of a SQL Server instance is isolated from other SQL Server instances. SQL Server instances can operate side-by-side on

**Prerequisites for selected features:**

Already installed:

- Windows PowerShell 3.0 or higher
- Microsoft Visual Studio 2010 Redistributable

**Disk Space Requirements**

Drive C: 1058 MB required, 69259 MB available

**Select All** **Unselect All**

Instance root directory: C:\Program Files\Microsoft SQL Server\

Shared feature directory: C:\Program Files\Microsoft SQL Server\

Shared feature directory (x86): C:\Program Files (x86)\Microsoft SQL Server\

**< Back** **Next >** **Cancel**

Check the installation options and path, then click Next

SQL Server 2016 Setup

### Instance Configuration

Specify the name and instance ID for the instance of SQL Server. Instance ID becomes part of the installation path.

Install Rules  
Installation Type  
License Terms  
Feature Selection  
Feature Rules  
**Instance Configuration**  
Server Configuration  
Database Engine Configuration  
Feature Configuration Rules  
Installation Progress  
Complete

☐ Default instance  
☒ **Named instance:**

---

**Instance ID:**

---

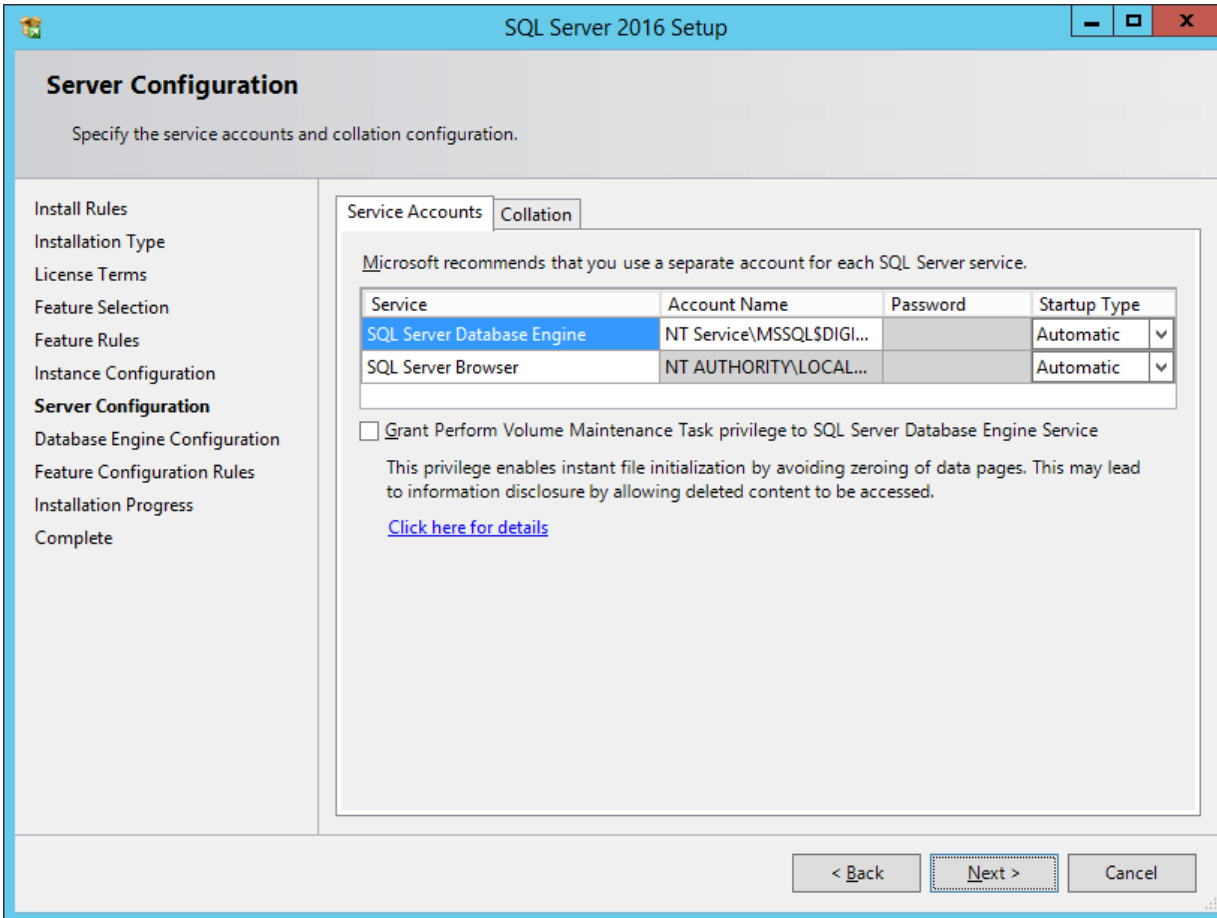
**SQL Server directory:** C:\Program Files\Microsoft SQL Server\MSSQL13.DIGITUS2016

**Installed instances:**

Instance Name	Instance ID	Features	Edition	Version
DIGITUS_LAB	MSSQL13.DIGITUS_...	SQLEngine, SQLEn...	Express	13.1.4001.0
DIGITUS2012	MSSQL11.DIGITUS2...	SQLEngine, SQLEn...	Express	11.2.5058.0
<Shared Compone...		Conn, BC, SDK		13.0.14500.10

< Back
Next >
Cancel

Give your SQL Server 2016 Express instance a meaning name, then click Next



**SQL Server 2016 Setup**

**Server Configuration**

Specify the service accounts and collation configuration.

Install Rules  
Installation Type  
License Terms  
Feature Selection  
Feature Rules  
Instance Configuration  
**Server Configuration**  
Database Engine Configuration  
Feature Configuration Rules  
Installation Progress  
Complete

Service Accounts Collation

Microsoft recommends that you use a separate account for each SQL Server service.

Service	Account Name	Password	Startup Type
SQL Server Database Engine	NT Service\MSSQL\$DIGI...		Automatic ▼
SQL Server Browser	NT AUTHORITY\LOCAL...		Automatic ▼

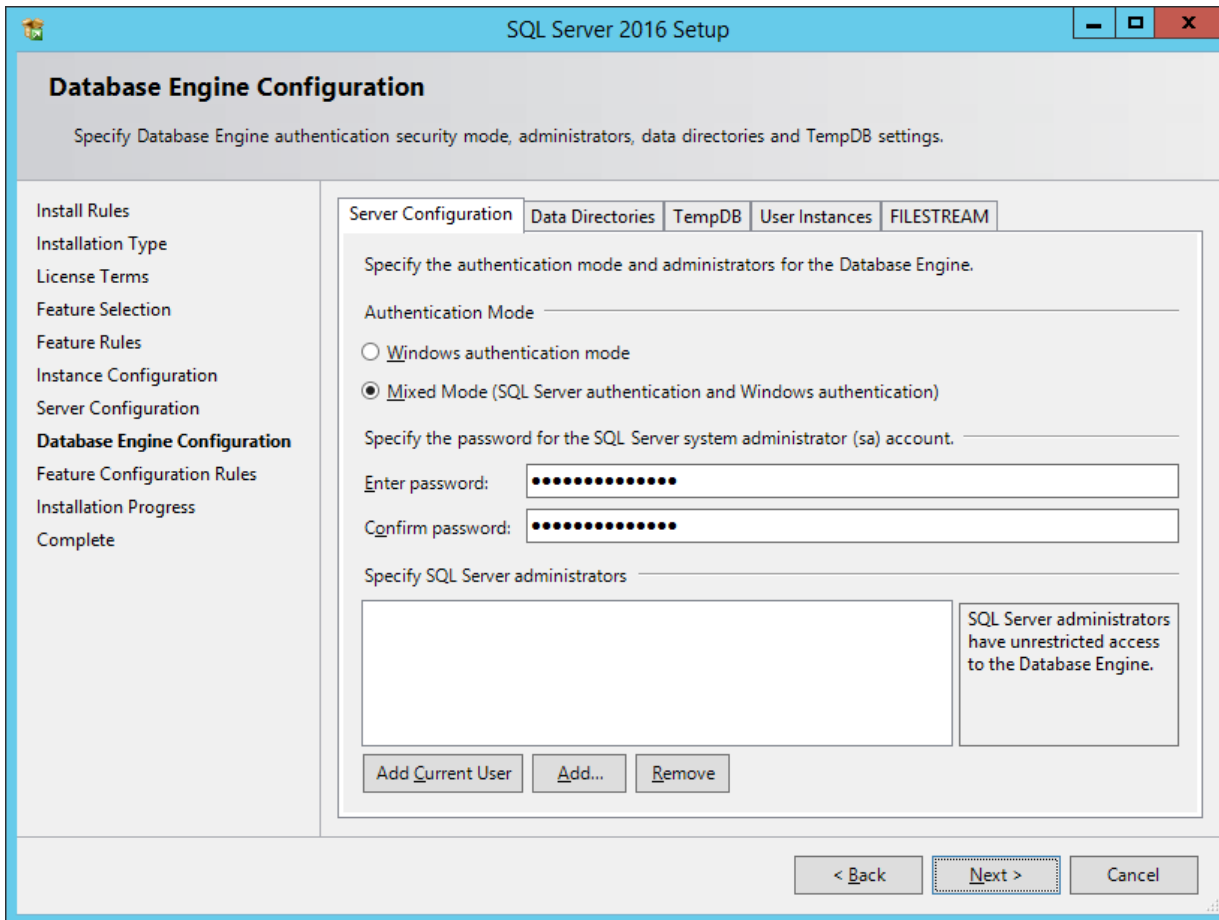
☐ Grant Perform Volume Maintenance Task privilege to SQL Server Database Engine Service

This privilege enables instant file initialization by avoiding zeroing of data pages. This may lead to information disclosure by allowing deleted content to be accessed.

[Click here for details](#)

< Back Next > Cancel

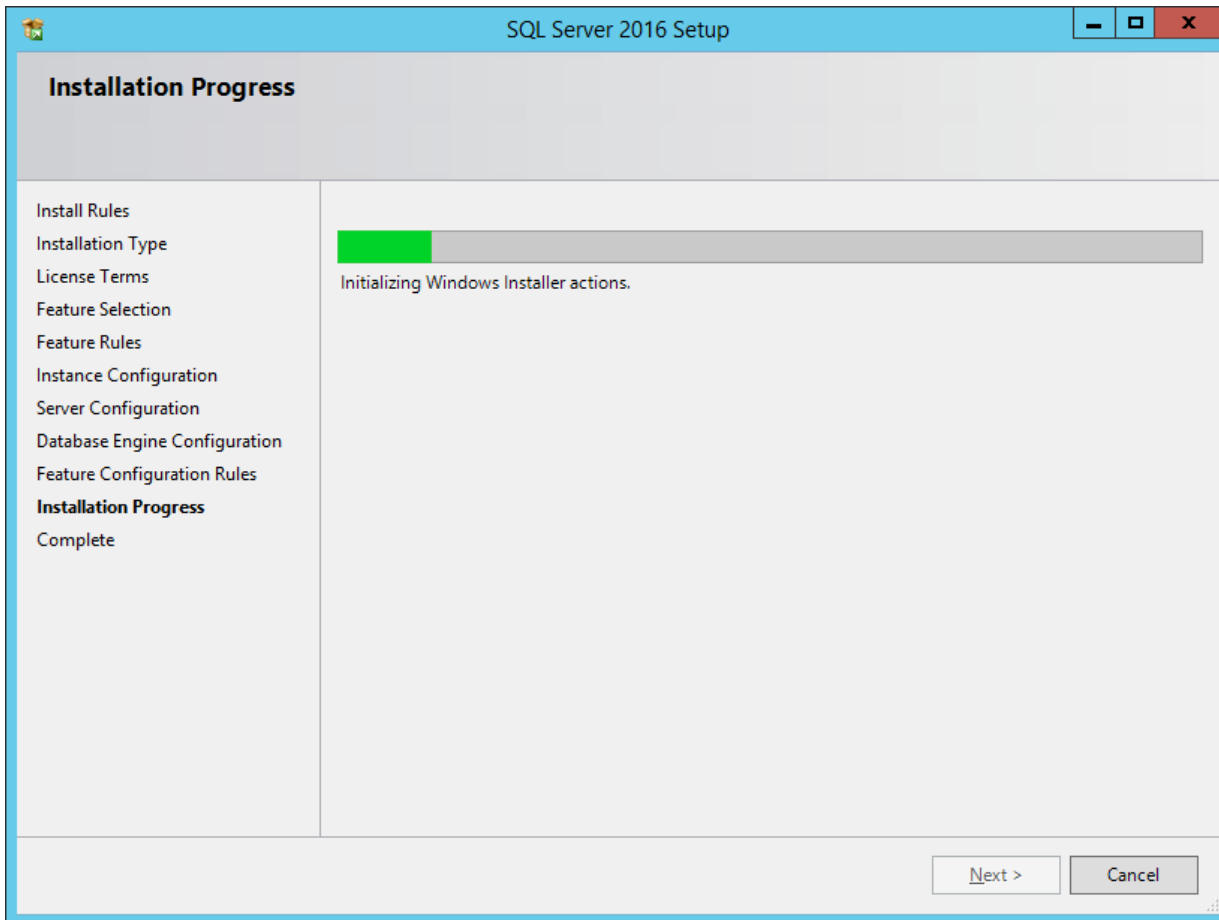
Makes changes to your Server Configuration if your organization requires it, we left the settings at default. Click Next



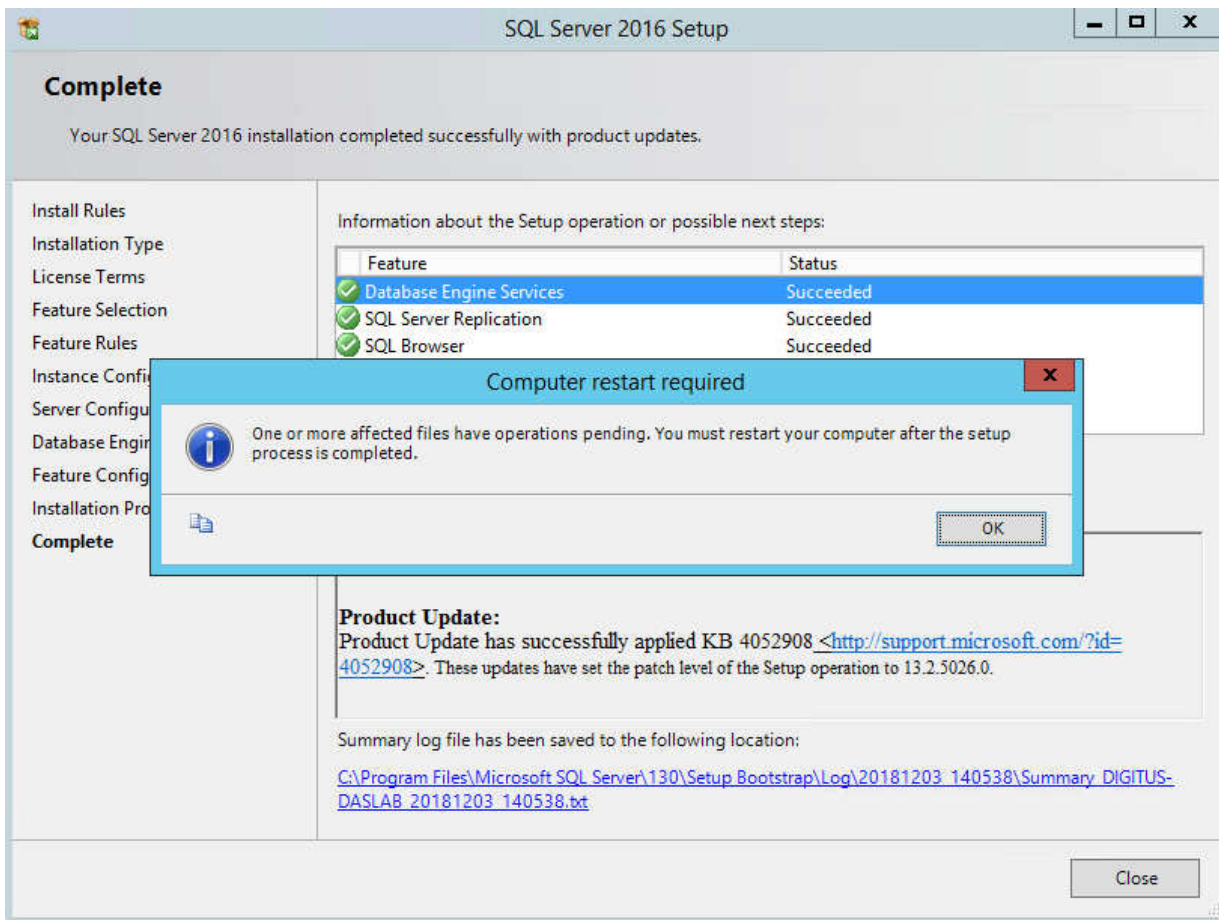
Digitus recommends that your SQL Server 2016 Express instance is installed in mixed mode. Select a suitable password for the 'sa' account – this will be used to connect your DAS-SQL Server / Service to the SQL database.

Don't forget to add any additional SQL Server admin users. Click Next





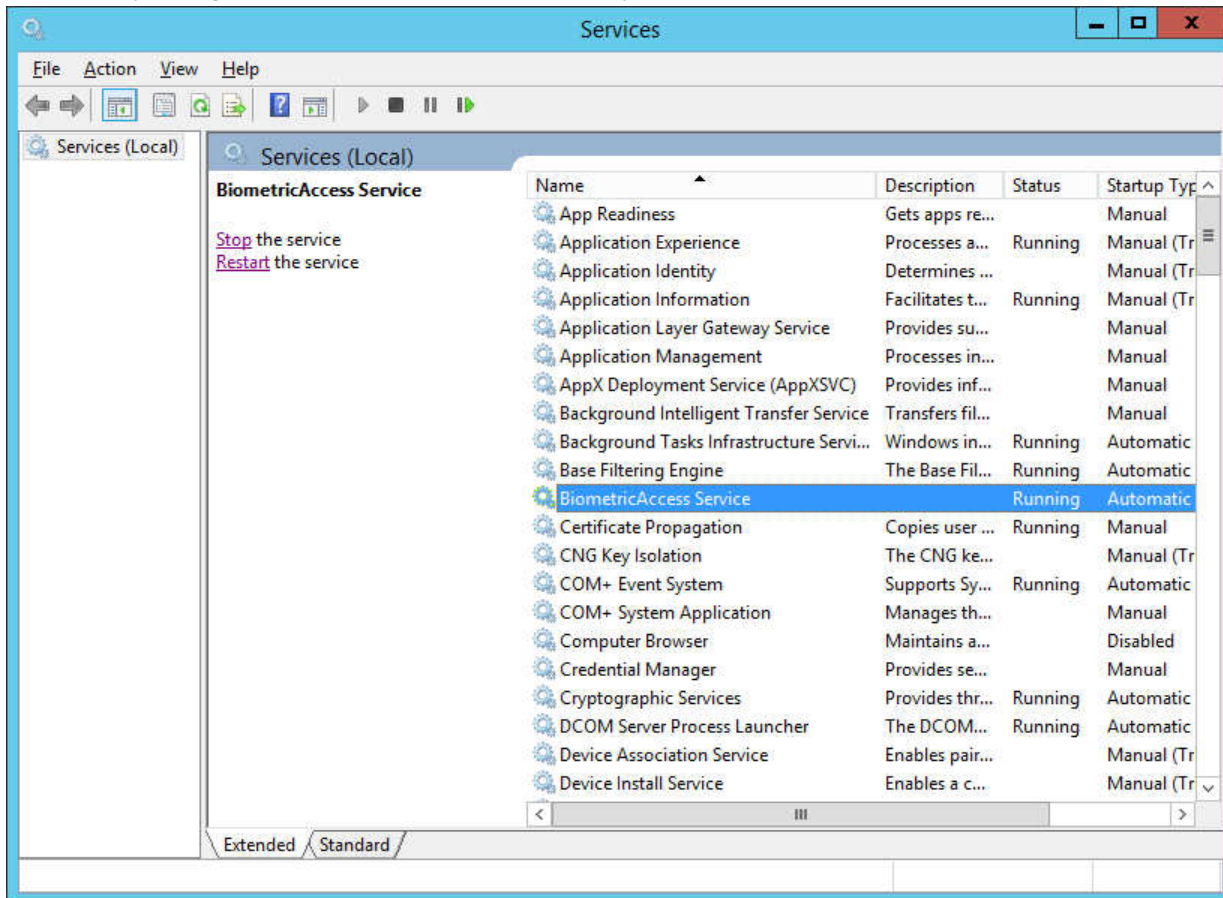
SQL Server installation has now started.



The installation of the new SQL Server 2016 Express instance is finished but a reboot is required to complete the installation.

## Preparing to connect DAS SQL to the New SQL instance

Next we need to transfer the database. In order to do this and ensure that no further data is pulled in by the DAS Server / Service updating the old database, we need to stop the BiometricAccess Service on the server.



Find the BiometricAccess service and click Stop to stop the service. As an additional security measure, you could even set the startup type to Disabled rather than Automatic.

**BiometricAccess Service Properties (Local Computer)** [X]

General | Log On | Recovery | Dependencies

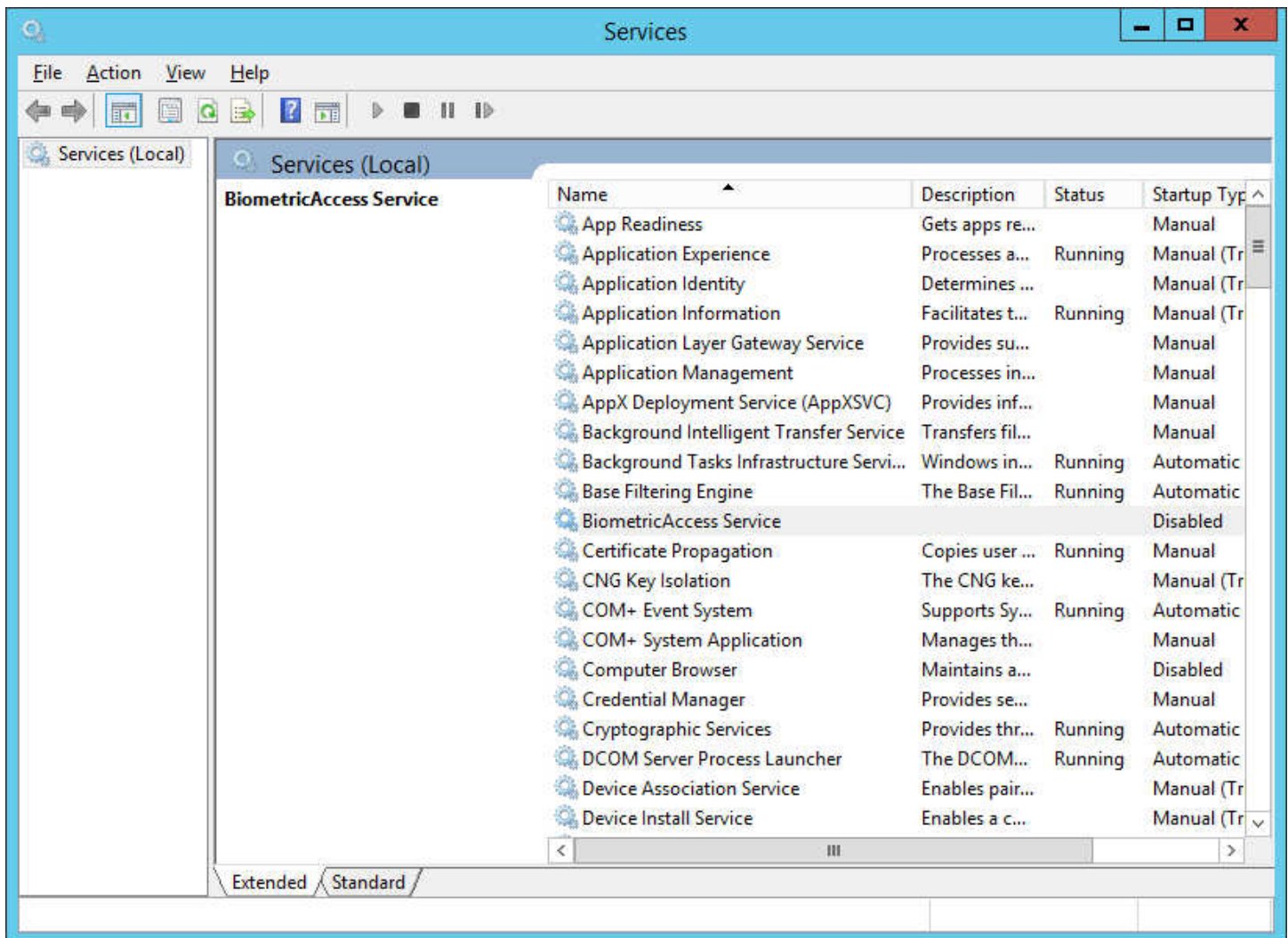
Service name: BiometricAccessService  
Display name: BiometricAccess Service  
Description: [Text Box] [Up/Down Arrow]  
Path to executable: "C:\Program Files (x86)\Digitus Biometrics\DAS Service\BiometricAccessCc  
Startup type: Disabled [Dropdown Arrow]

---

Service status: Running  
[Start] [Stop] [Pause] [Resume]

You can specify the start parameters that apply when you start the service from here.  
Start parameters: [Text Box]

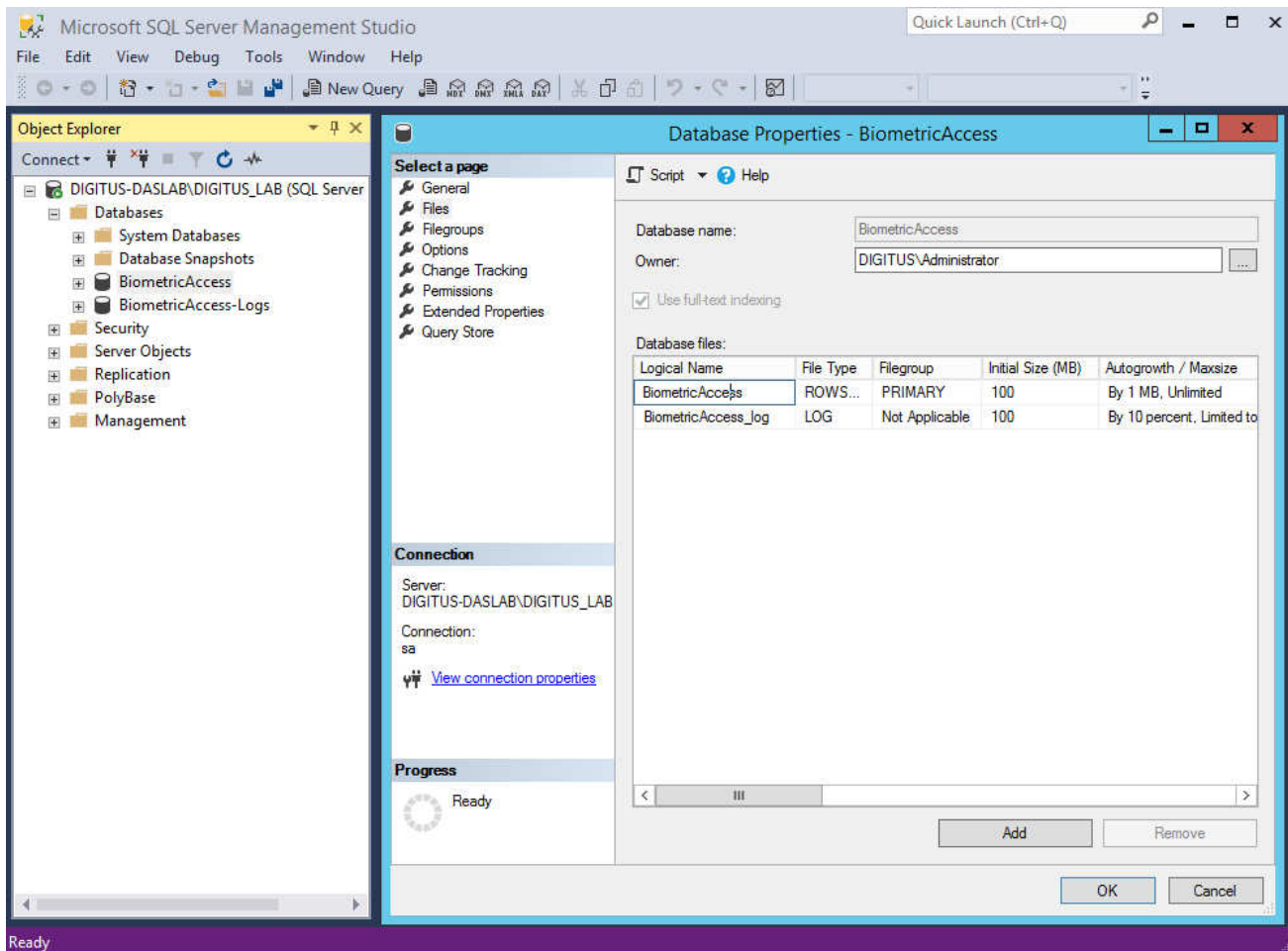
[OK] [Cancel] [Apply]



Confirmation that the BiometricAccess Service startup type is set to Disabled and the service is stopped.

## Preparing to transfer your database files.





Open up SQL Server Management Studio (SSMS), open the Databases tree and right-click BiometricAccess -> Properties



In the Database Properties window, use the horizontal scroll bar to check the database path – this is where you are going to COPY your data from. Just double check the same path is set for the BiometricAccess-Logs database.

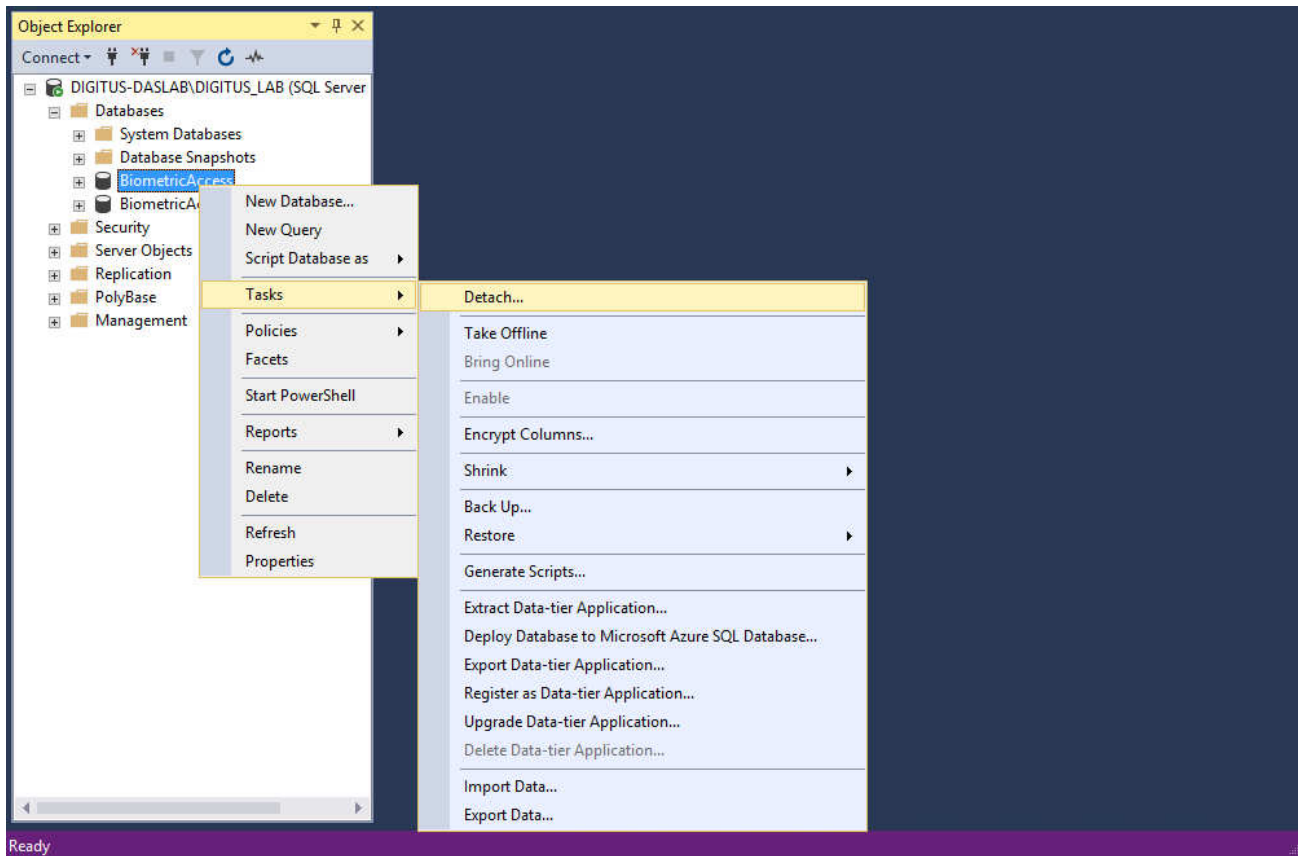
Once you have made a note of your data path, open Window Explorer and browse to the path noted above.

You should see 4 files as follows:

Name	Date modified	Type	Size
 BiometricAccess	12/3/2018 3:09 PM	SQL Server Databa...	102,400 KB
 BiometricAccess_log	12/3/2018 3:09 PM	SQL Server Databa...	102,400 KB
 BiometricAccess-Logs	12/3/2018 3:12 PM	SQL Server Databa...	1,087,808 KB
 BiometricAccess-Logs_log	12/3/2018 3:12 PM	SQL Server Databa...	1,475,904 KB

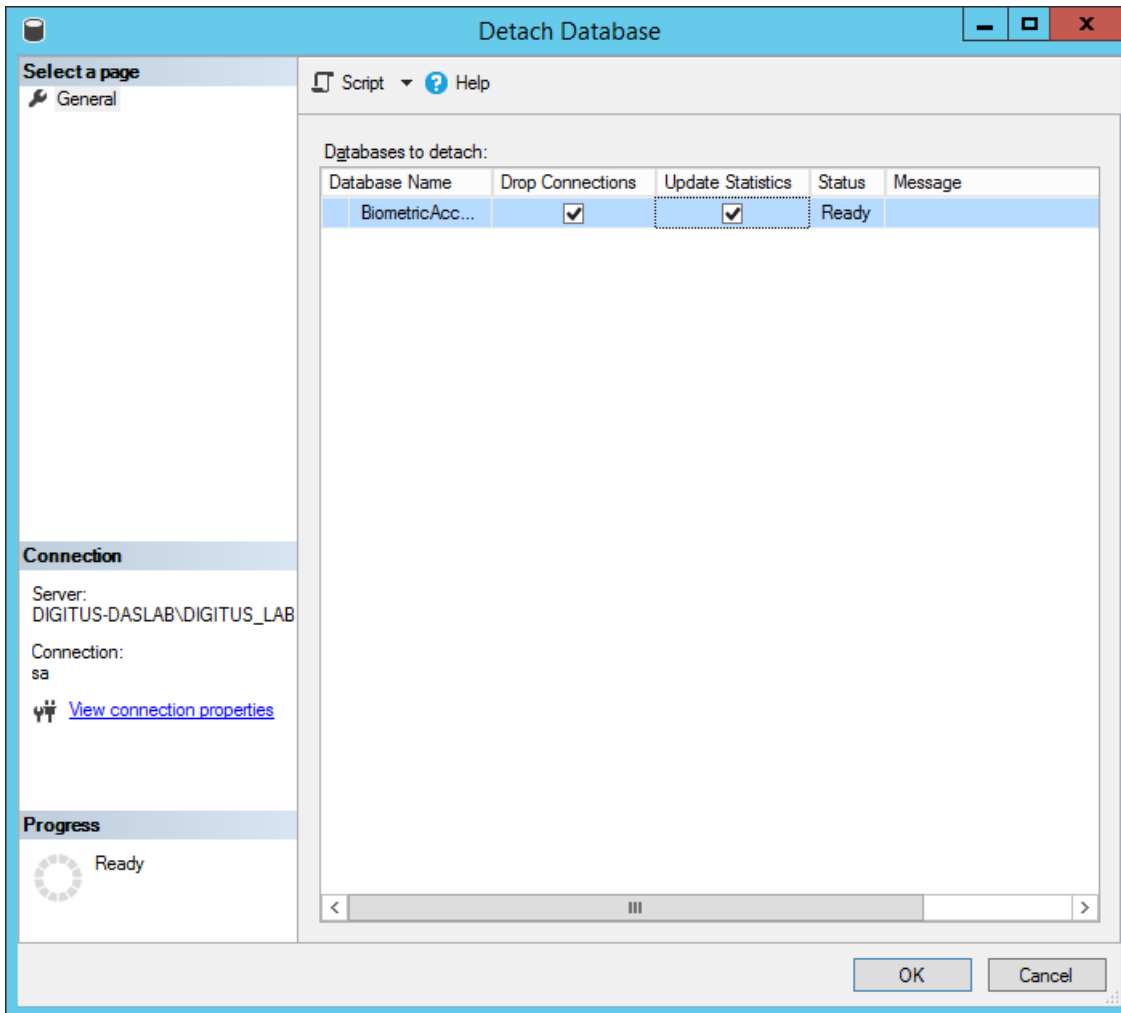
## Detaching your database files

You now need to “detach” your BiometricAccess and BiometricAccess-Logs databases, so back in SQL Server Management Studio, browse to the BiometricAccess database, right click it, select Tasks, then Detach.



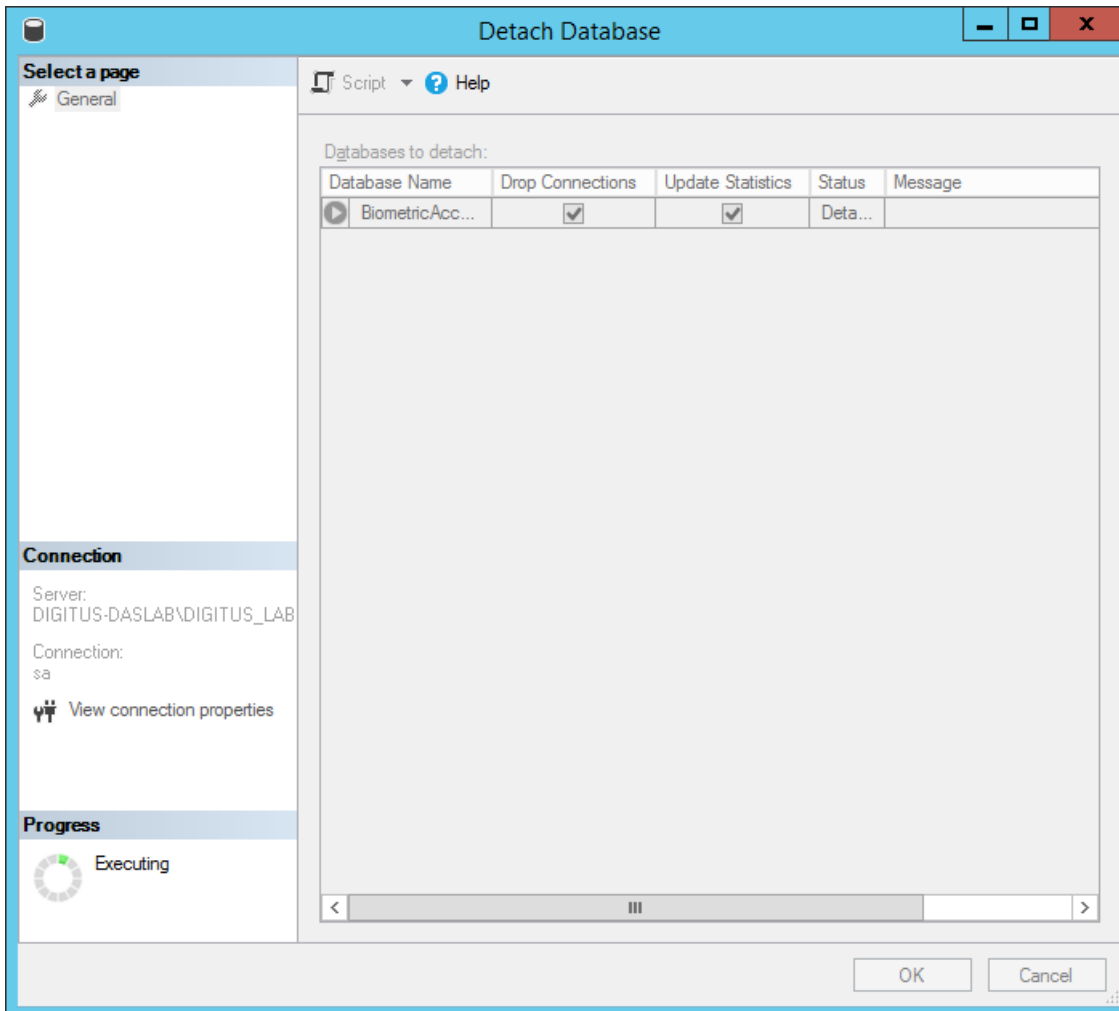
Detach Database, check both Drop Connections and Update Statistics before clicking OK



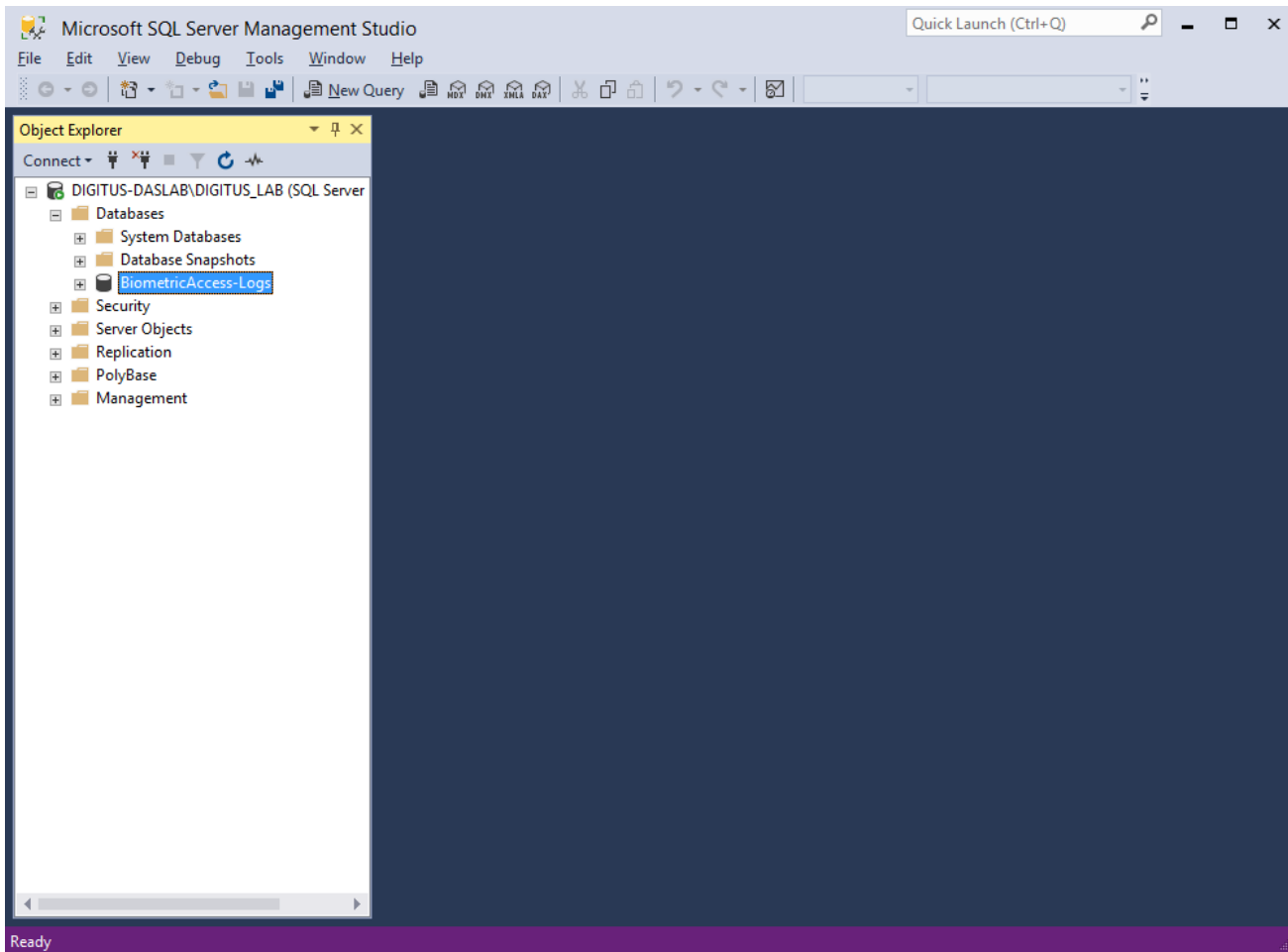


The Detach takes a few seconds to run



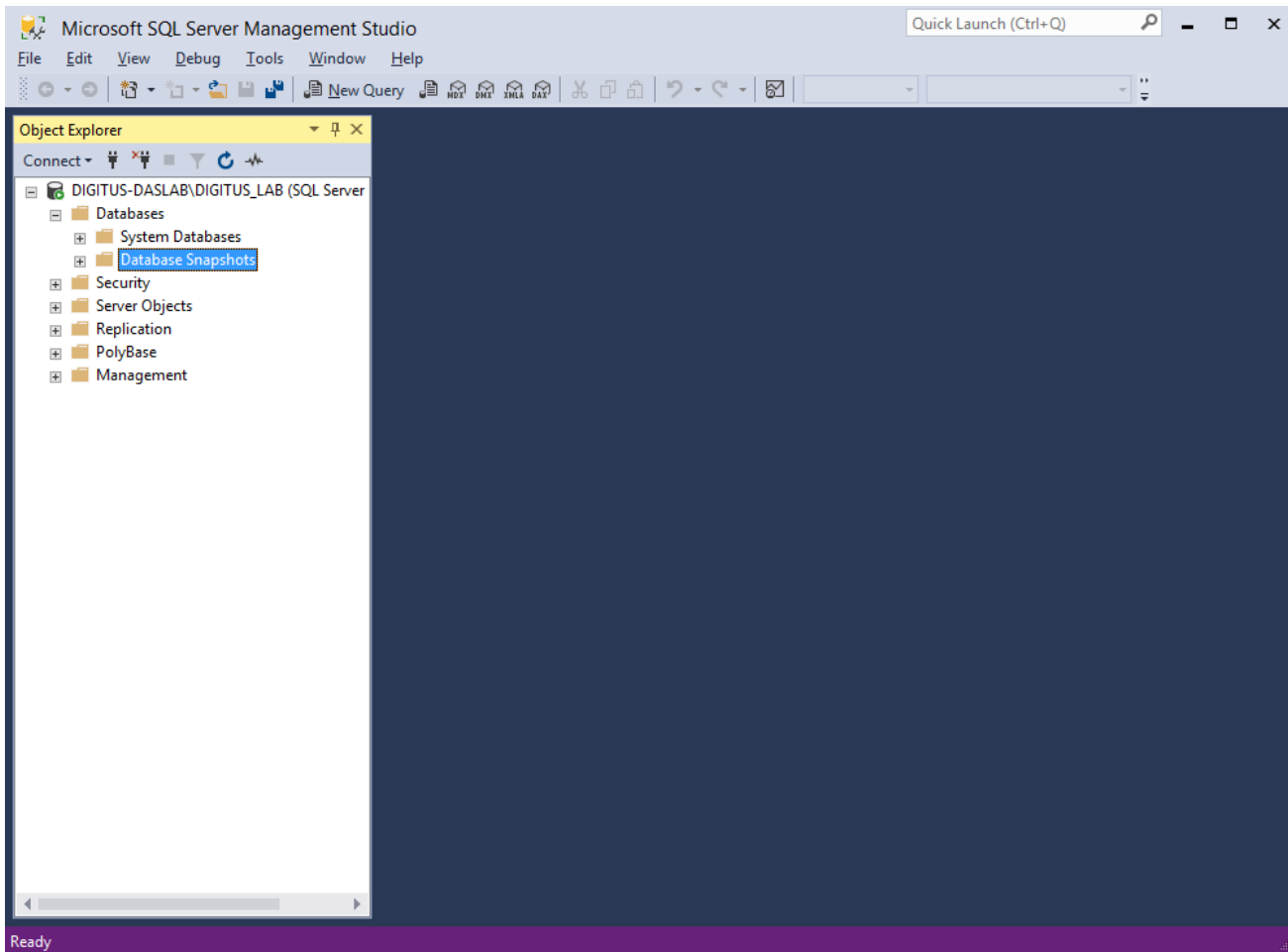


Checking back in SQL Server Management Studio shows that the BiometricAccess database is longer connected







Now repeat the process to detach the BiometricAccess-Logs database.

Once completed, you should see that SQL Server Management Studio has updated and both databases have been detached.



You should also notice that the time stamps have been updated for your 4 files in Windows Explorer.

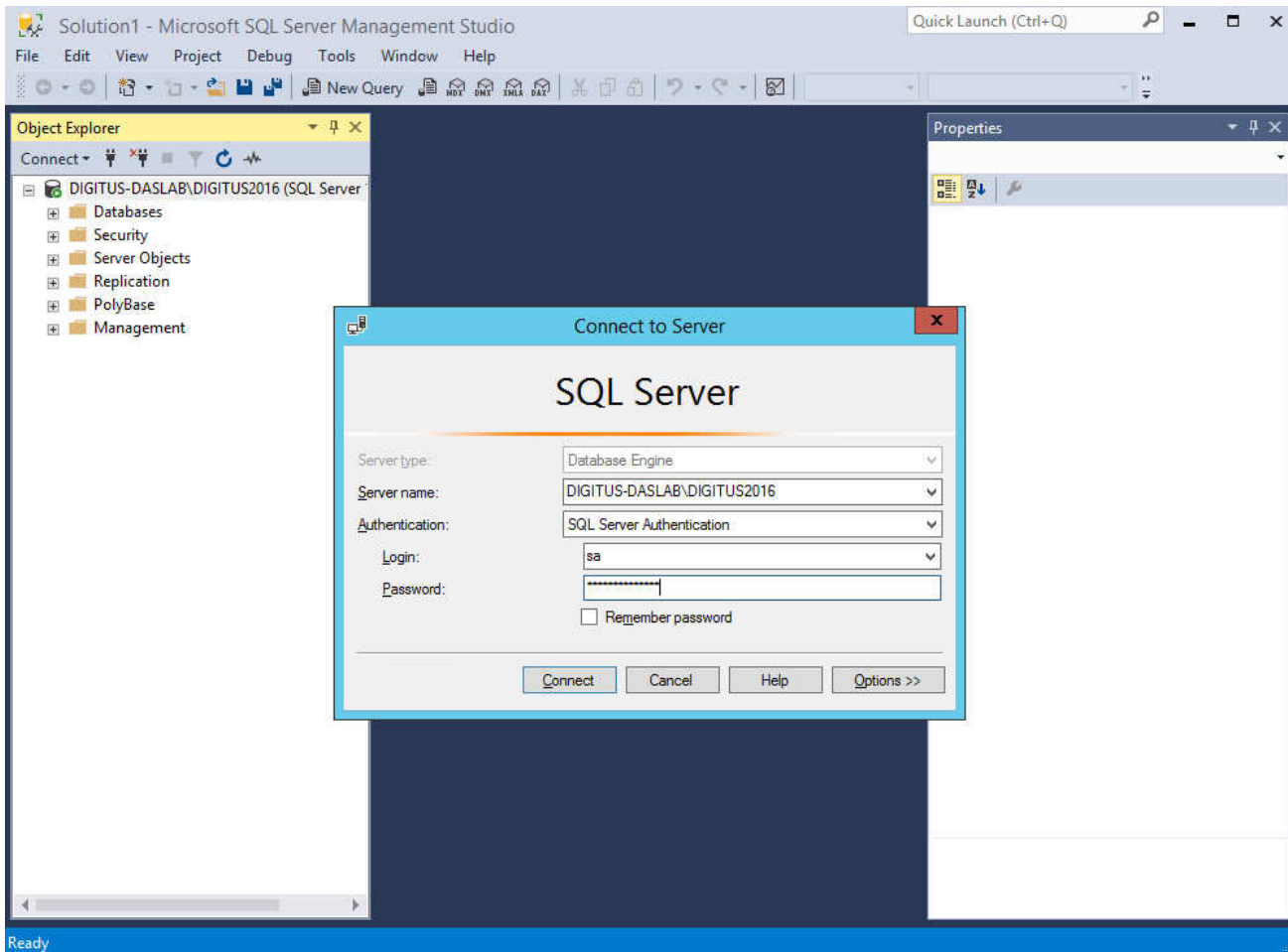
Name	Date modified	Type	Size
 BiometricAccess	12/3/2018 3:56 PM	SQL Server Databa...	102,400 KB
 BiometricAccess_log	12/3/2018 3:56 PM	SQL Server Databa...	102,400 KB
 BiometricAccess-Logs	12/3/2018 3:58 PM	SQL Server Databa...	1,087,808 KB
 BiometricAccess-Logs_log	12/3/2018 3:58 PM	SQL Server Databa...	1,475,904 KB

## Copying the data over

Select your 4 files and copy them to the clipboard. In the event of large file sizes, and depending on whether you are moving to a new physical / virtual server, it may be worth zipping / compressing your files prior to copying them, copying the compressed files and then uncompressing them in the destination folder.

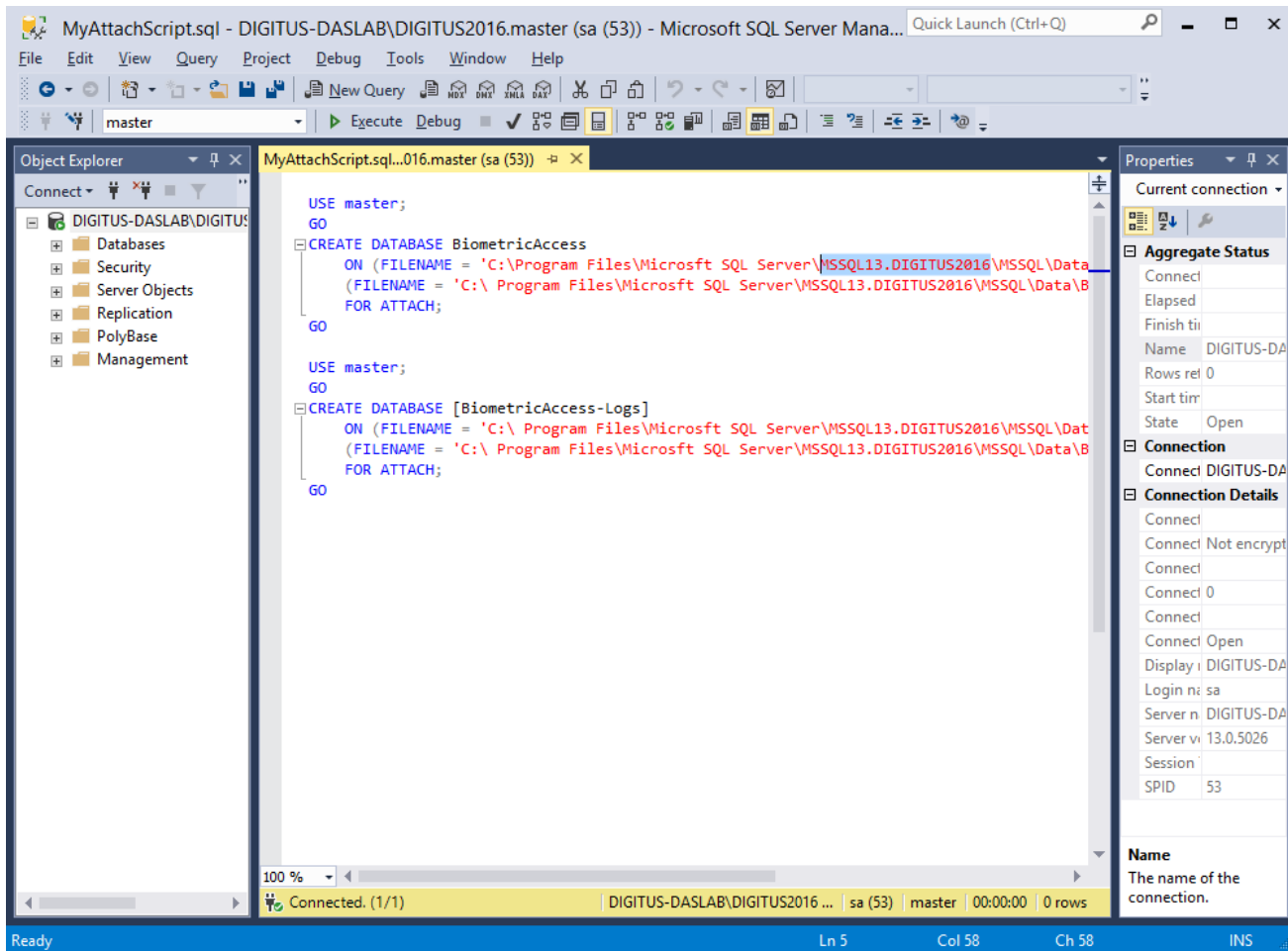
## Connect to the new SQL instance

Connect SSMS to your new instance, using the 'sa' password you set when configuring your SQL Server 2016 Express instance.



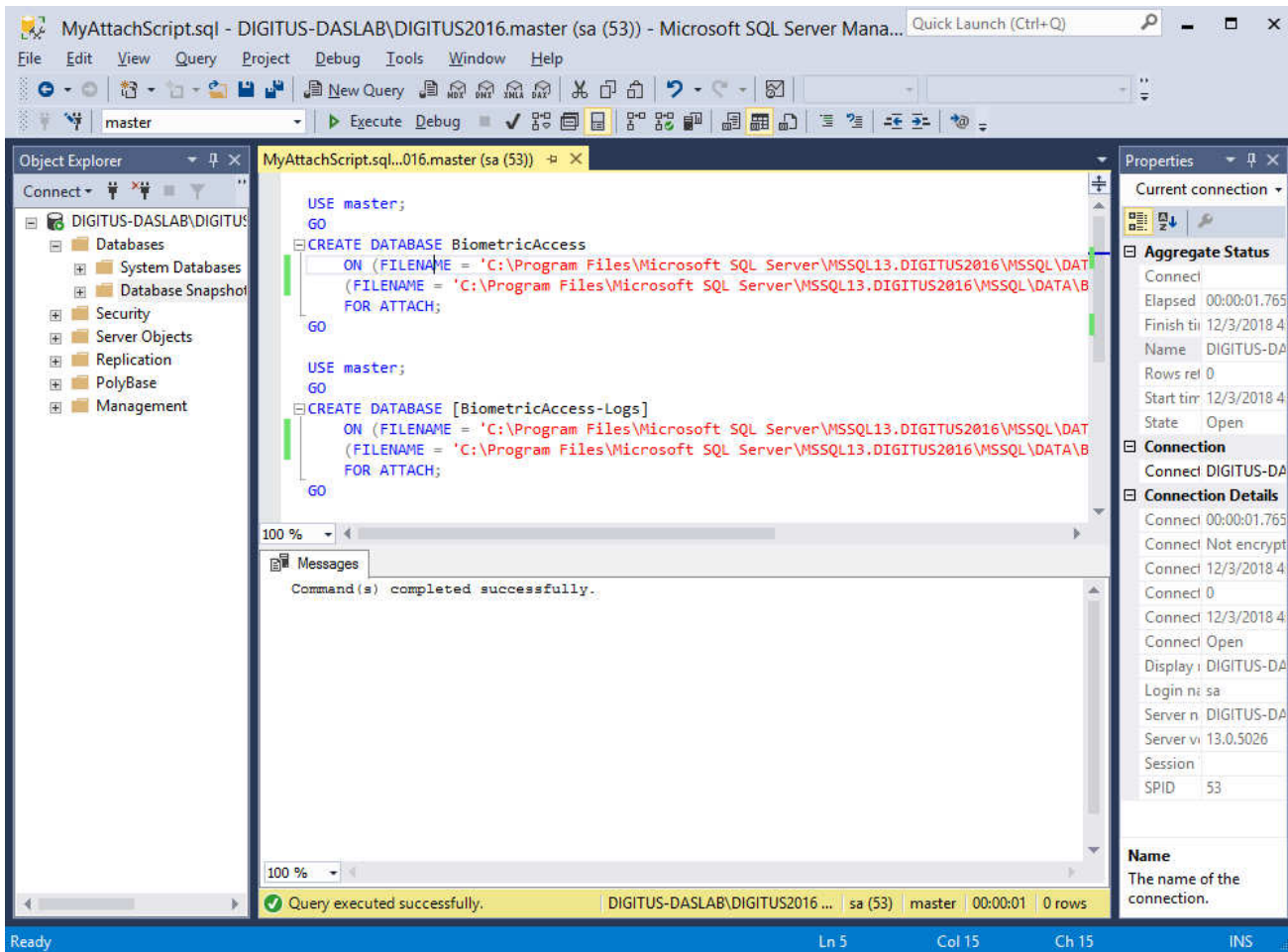
## Attaching the database files

Load the MyAttachScript SQL script (provided separately), and be sure to change the data paths for the 4 files to match where you copied your SQL data

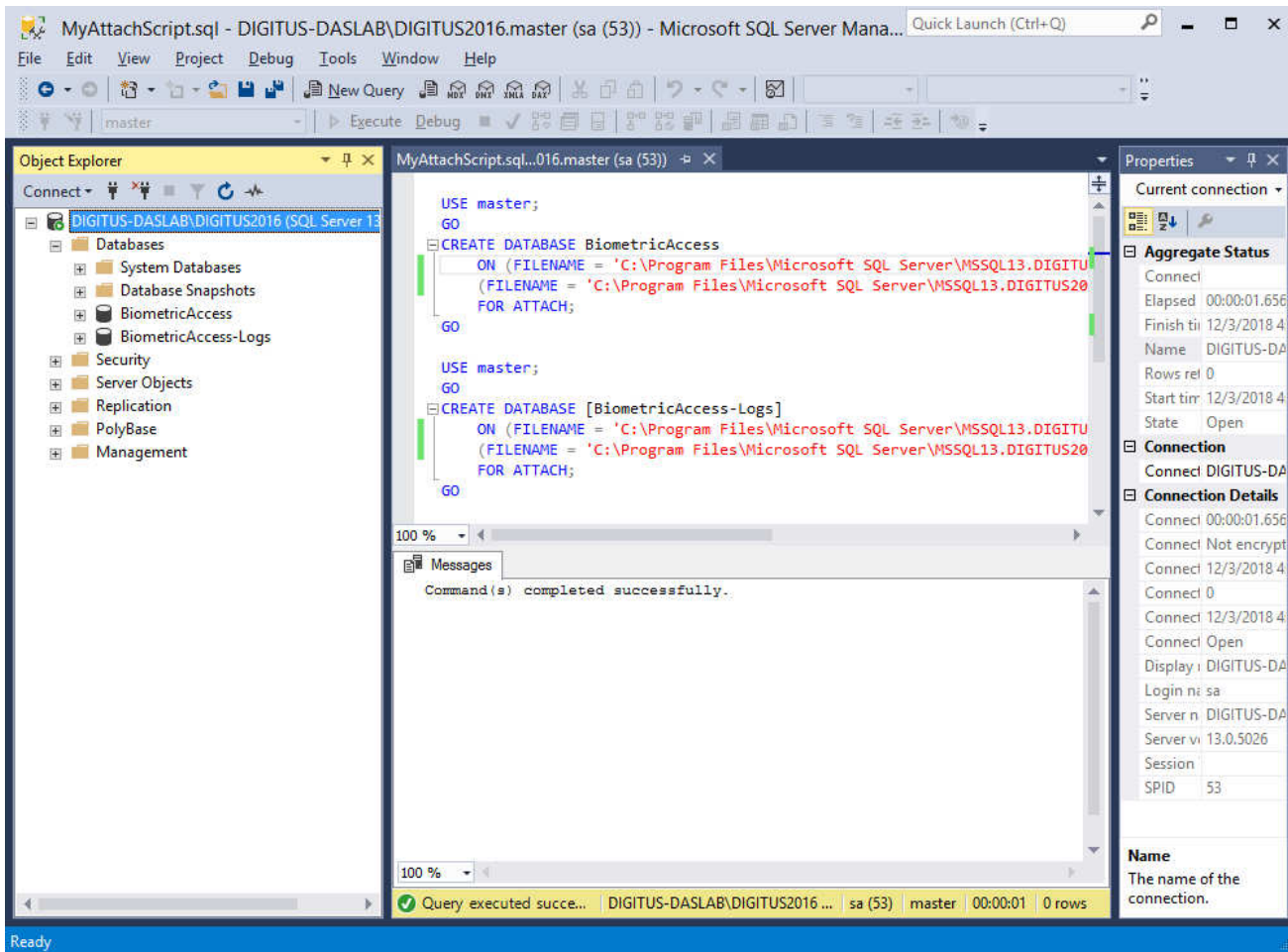


Notice the Instance path highlighted above.

Once you have modified the files paths, execute / run the script to attach your databases.



Once you see the “Command(s) completed successfully” message in the Messages window, click on your instance name in the top left of the SQL Server Management Studio window followed by Refresh in order to see the newly attached databases.



The screenshot shows the Microsoft SQL Server Enterprise Manager interface. The title bar indicates the connection is to 'MyAttachScript.sql - DIGITUS-DASLAB\DIGITUS2016.master (sa (53)) - Microsoft SQL Server Mana...'. The Object Explorer on the left shows the server structure, including Databases, System Databases, Database Snapshots, BiometricAccess, BiometricAccess-Logs, Security, Server Objects, Replication, PolyBase, and Management. The central pane displays the SQL script being executed:

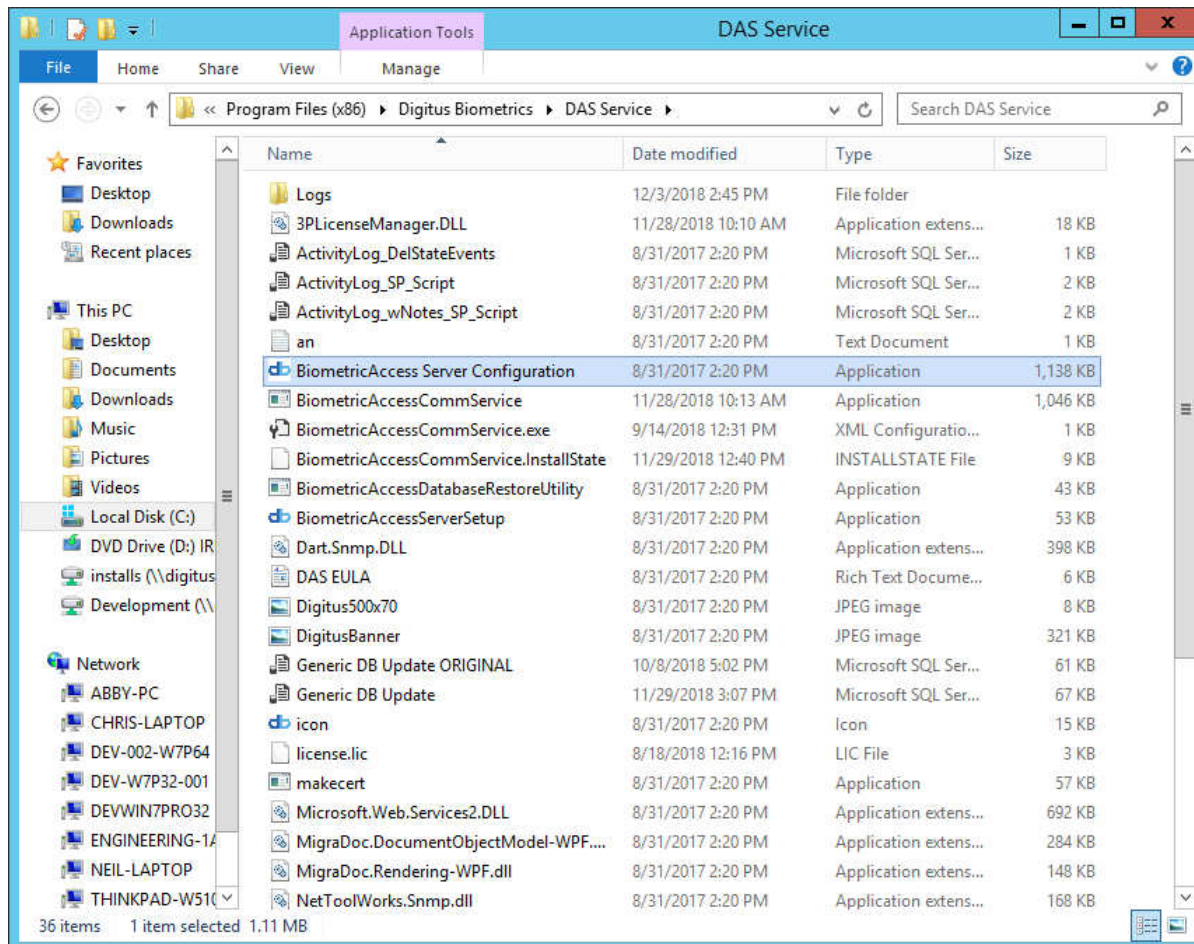
```
USE master;
GO
CREATE DATABASE BiometricAccess
ON (FILENAME = 'C:\Program Files\Microsoft SQL Server\MSSQL13.DIGITUS2016\BiometricAccess.mdf',
    FILENAME = 'C:\Program Files\Microsoft SQL Server\MSSQL13.DIGITUS2016\BiometricAccess.ldf')
FOR ATTACH;
GO
USE master;
GO
CREATE DATABASE [BiometricAccess-Logs]
ON (FILENAME = 'C:\Program Files\Microsoft SQL Server\MSSQL13.DIGITUS2016\BiometricAccess-Logs.mdf',
    FILENAME = 'C:\Program Files\Microsoft SQL Server\MSSQL13.DIGITUS2016\BiometricAccess-Logs.ldf')
FOR ATTACH;
GO
```

The Messages pane at the bottom shows the command completed successfully. The Properties pane on the right displays connection details for the current connection, including the server name, login name, and session ID.



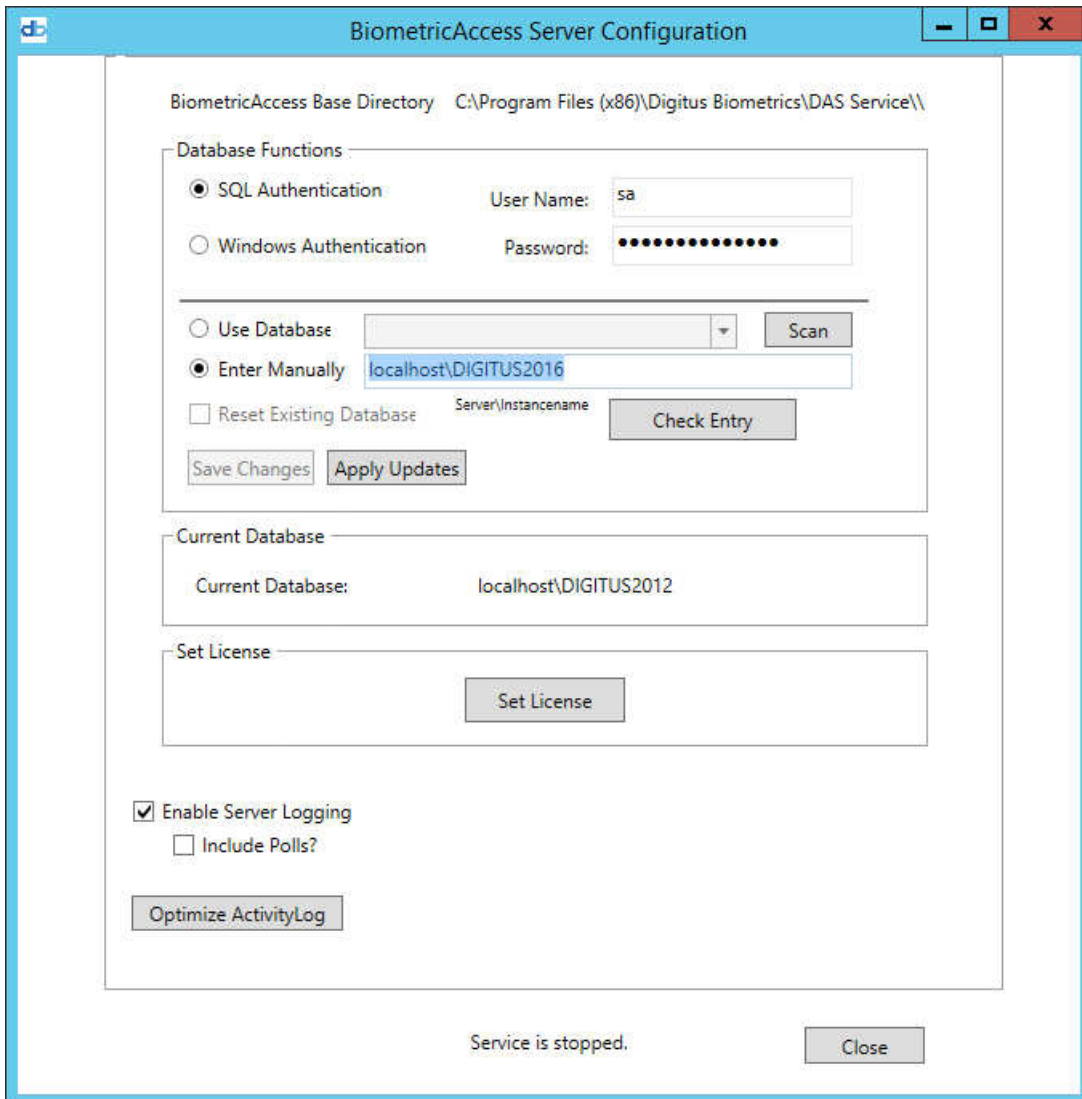
## Connect DAS SQL to the new databases

Connect your new SQL Server 2016 Express instance and newly copied / attached databases to DAS SQL.



Right click and run BiometricAccessServer Configuration as admin.





BiometricAccess Base Directory C:\Program Files (x86)\Digitus Biometrics\DAS Service\

Database Functions:

☒ SQL Authentication User Name: sa Password: .....

☐ Windows Authentication

☐ Use Database Scan

☒ Enter Manually localhost\DIGITUS2016

☐ Reset Existing Database Server\Instancename Check Entry

Save Changes Apply Updates

Current Database

Current Database: localhost\DIGITUS2012

Set License

Set License

☒ Enable Server Logging

☐ Include Polls?

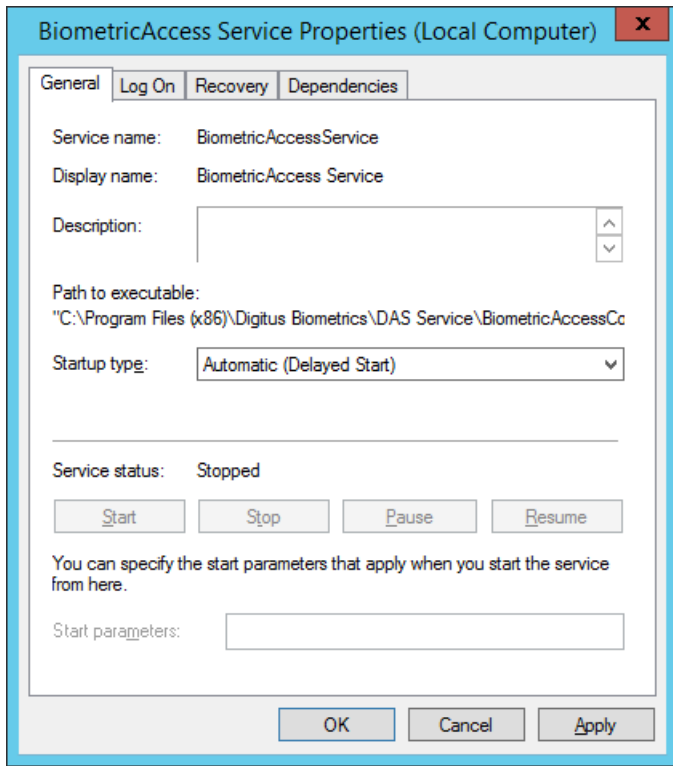
Optimize ActivityLog

Service is stopped. Close

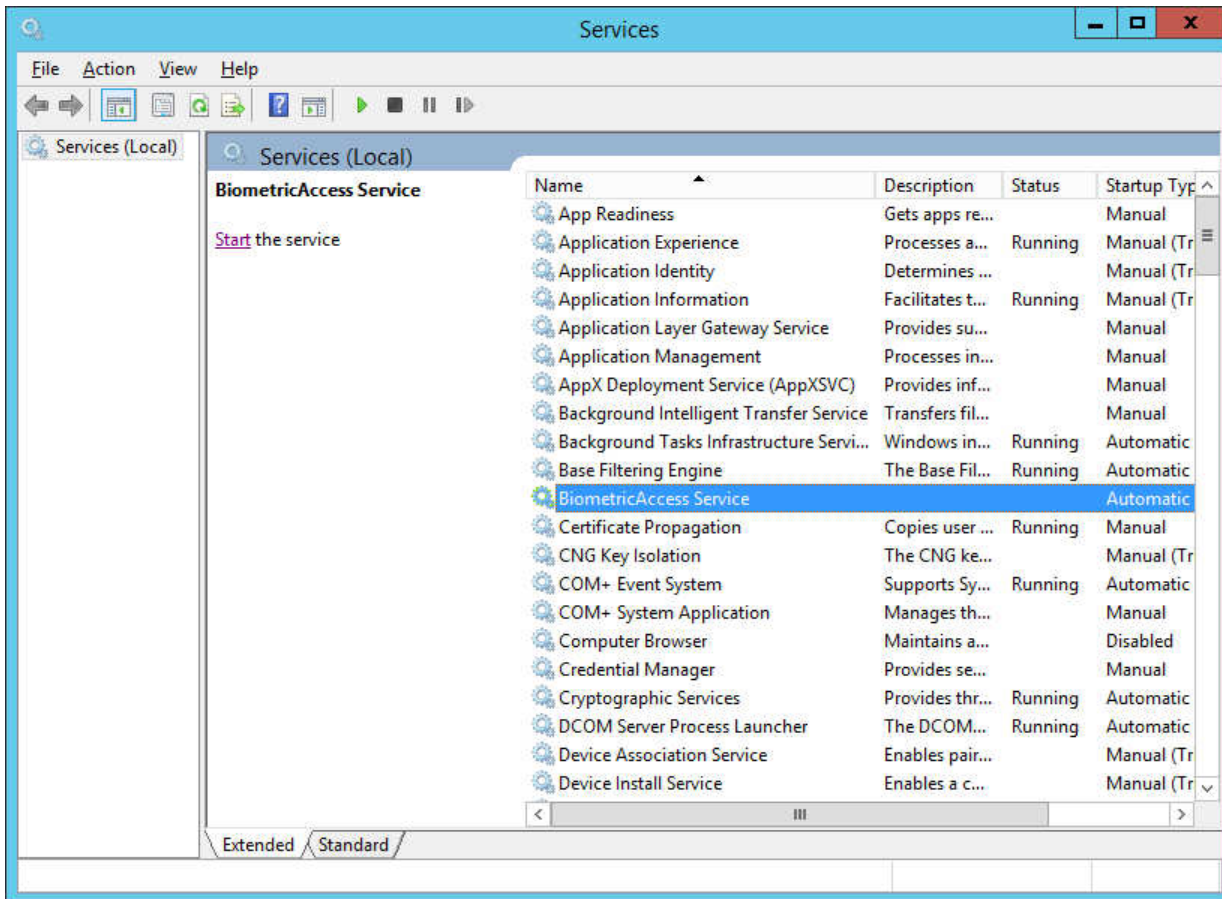
Enter your SQL Server instance name, then click the Check Entry button.

If DAS SQL can successfully connect to your instance, the Save Changes button will enable. Click the Save Changes button, then save operation should only take a second or 2. Then click Apply Updates to apply any schema changes to the DAS SQL databases. Again this should only take a matter of a couple of seconds.

Once finished, click Close. You will be asked if “you wish to start the service at this time” – as we disabled the service earlier in the process, click No.



Go back to Windows Service and select / double click the BiometricAccess Service and set the startup type to “Automatic (Delayed Start)”, before clicking OK.



Now click Start to start the BiometricAccess Service, making sure that the service enters the “Running” state.

The final thing is to test you can access your DAS SQL by logging in to the client.