

# 7 REASONS YOUR SQL SERVER SERVICE WON'T START

BY PINAL DAVE

# INTRODUCTION

If you are a professional SQL Server DBA, you must have faced this issue at least once in your career. Your junior admin calls you during your vacation time with the news that the production instance for some strange reason is not starting and something seems to be wrong. There could be many reasons which can cause this problem, and this paper will focus on the top 7 reasons that we have seen along with tips to resolve the issues.

Here are the initial error messages which you could receive when trying to start SQL Services from various places.

**Windows could not start the SQL Server (MSSQLSERVER) on Local Computer.  
For more information, review the System Event Log.**

or

**The service failed to respond in a timely fashion.**

or

**The service failed to start.**

We will investigate reasons for receiving each of these messages and possible resolutions for them.

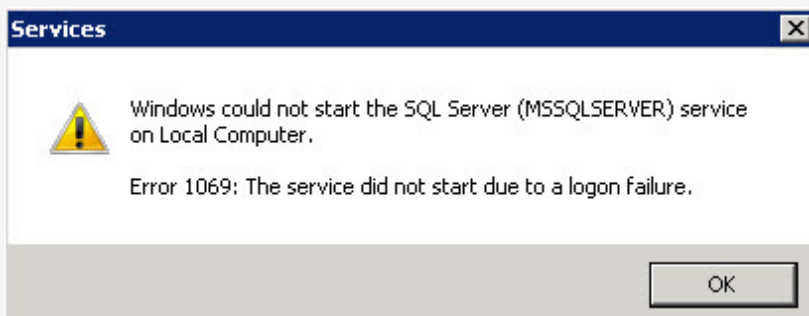


# REASON #1

Service account password was changed but not updated on the server where SQL Server instance is installed.

This is one of the most common causes where the service account password has been changed by a domain admin or SQL Admin, but this information is not updated in SQL Server Services.

Here is the error which we would see if we try to start using Services.

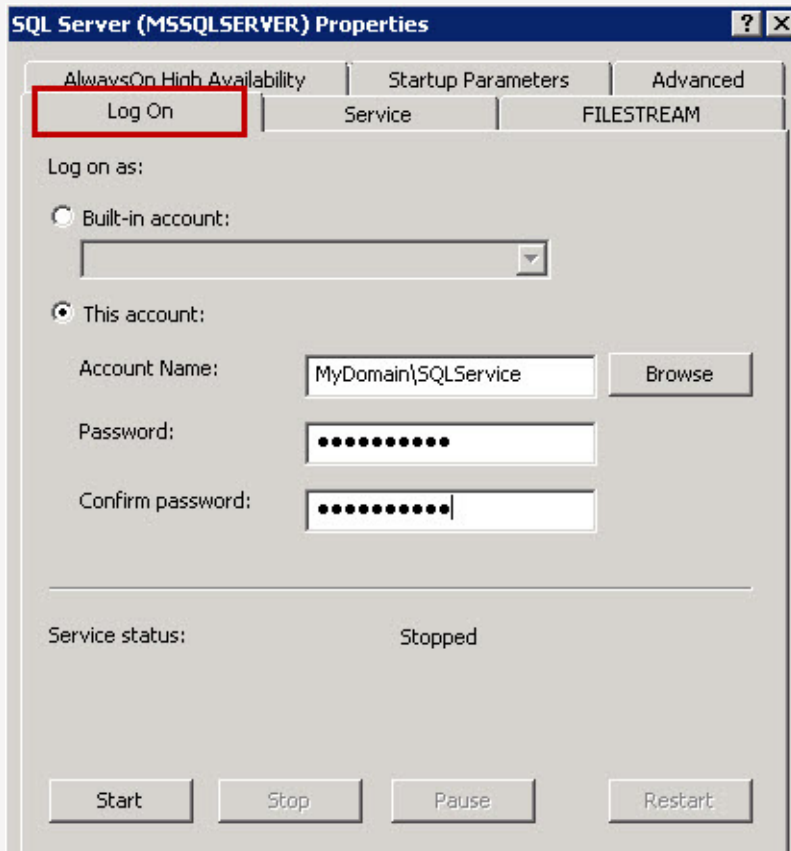


System Event logs should show this information:

```
Log Name:          System
Source:            Service Control Manager
Date:              <Date Time>
Event ID:          7000
Task Category:    None
Level:             Error
Keywords:          Classic
User:              N/A
Computer:          MyServer
Description:       The SQL Server (MSSQLSERVER) service failed to
                  start due to the following error:
                  The service did not start due to a logon failure.
```

## SOLUTION:

We need to update the password in services. The right way to do it is to use SQL Server Configuration Manager and type in the new password (under Log On tab) as shown below.

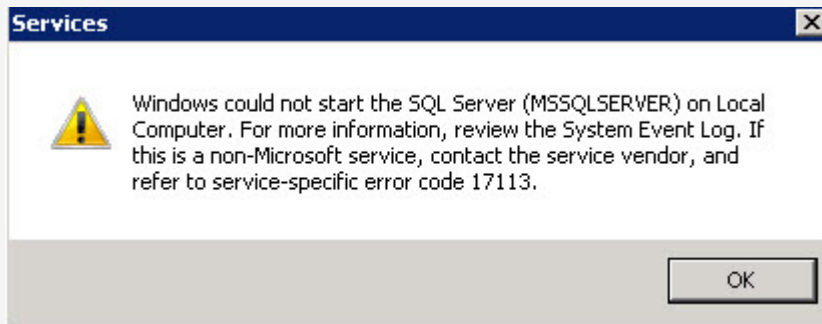


That was easy, to say the least. Now let us move to the next message.

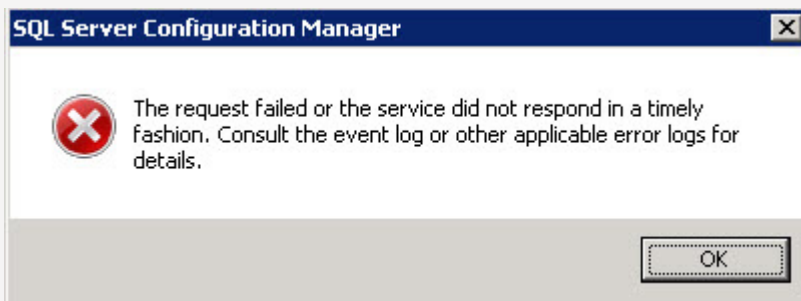
## REASON #2

### Startup parameters have incorrect file path locations.

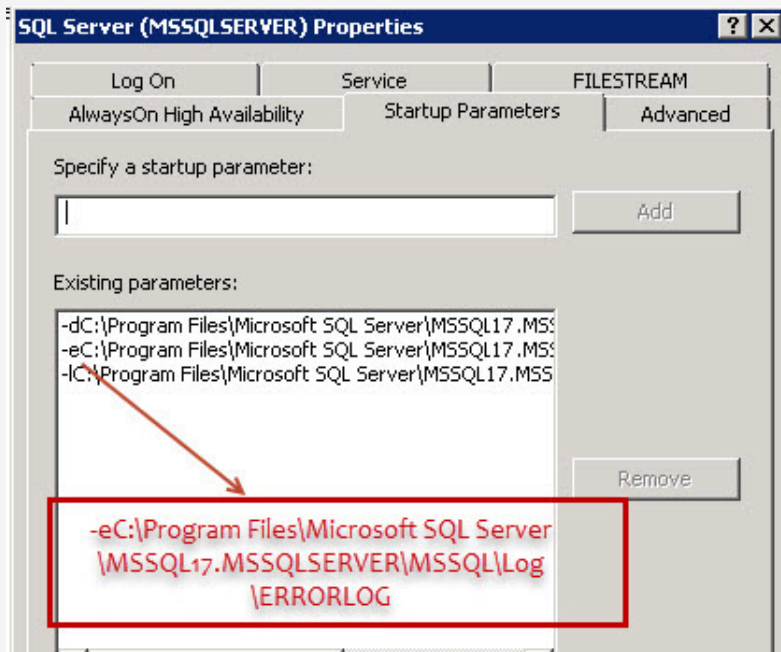
This is another common cause of SQL Server Service startup failure. Let's assume that the master database is located on a drive and files of the database (master.mdf and mastlog.ldf) are not available. Since the master database is a system database, SQL Service would fail to start. If we try to start SQL via services, we will get this error.



If we attempt the same via the configuration manager, we get a standard error which doesn't explain much.



Whenever we get such errors, we should start looking at SQL Server ERRORLOGs that are defined under start-up parameters or application event log. We can look at SQL Server Configuration Manager and look for the Startup parameter having a name -e as shown below (for SQL 2017):



We can open ERRORLOG using notepad or any other text editor. Here is the snippet which shows the problem.

```
<Date Time> Server      Error: 17113, Severity: 16, State: 1.  
  
<Date Time> Server      Error 2(The system cannot find the file specified.)  
occurred while opening file 'C:\Program Files\Microsoft SQL Server\MSSQL14.  
MSSQLSERVER\MSSQL\DATA\master.mdf' to obtain configuration information at startup.  
An invalid startup option might have caused the error. Verify your startup  
options, and correct or remove them if necessary.
```

As highlighted above, we can see that SQL is not able to find the file master.mdf.

Below is another example of an error for the model database.

```
<Date Time> spid9s Error: 17207, Severity: 16, State: 1.
```

```
<Date Time> spid9s FileMgr::StartLogFiles: Operating system error 2  
(The system cannot find the file specified.) occurred while creating or opening  
file 'C:\Program Files\Microsoft SQL Server\MSSQL14\MSSQL\DATA\modellog.ldf'.  
Diagnose and correct the operating system error, and retry the operation.
```

```
<Date Time> spid9s File activation failure. The physical file name "C:\Program  
Files\Microsoft SQL Server\MSSQL14\MSSQL\DATA\modellog.ldf" may be incorrect.
```

```
<Date Time> spid9s Error: 945, Severity: 14, State: 2.
```

```
<Date Time> spid9s Database 'model' cannot be opened due to inaccessible files  
or insufficient memory or disk space. See the SQL Server error log for details.
```

```
<Date Time> spid9s Could not create tempdb. You may not have enough disk space  
available. Free additional disk space by deleting other files on the tempdb  
drive and then restart SQL Server. Check for additional errors in the event  
log that may indicate why the tempdb files could not be initialized.
```

## SOLUTION:

First we need to find out the correct location of the files. Once files are identified, either put them into the location where SQL Server wants or ALTER the database to point to the correct location. If there is an issue with the model or TempDB database, then we need to start SQL Server using trace flag 3608 as explained [here](#).

## REASON #3

System database files are not available due to accidental deletion or corruption due to disk failures.

If files are missing or corrupted for system databases (master and model), the SQL Server service would not start. ERRORLOG (mentioned earlier) would contain the exact database name and file name which has the problem. Here are few snippets of error text pointing to the corruption of system databases.

```
<Date Time> spid5s Starting up database 'master'.
```

```
<Date Time> spid5s Error: 9003, Severity: 20, State: 1.
```

```
<Date Time> spid5s The log scan number (216:72:1) passed to log scan in database 'master' is not valid. This error may indicate data corruption or that the log file (.ldf) does not match the data file (.mdf). If this error occurred during replication, re-create the publication. Otherwise, restore from backup if the problem fails during startup.
```

```
<Date Time> spid5s Cannot recover the master database. SQL Server is unable to run. Restore master from a full backup, repair it, or rebuild it. For more information about how to rebuild the master database, see SQL Server Books Online.
```

## SOLUTION:

Depending on which database file is corrupted, we need to take appropriate action. If master database files are corrupted (error above), then we need to rebuild the master database and restore it from the backup. If the issue exists with other system databases, then SQL can be started via trace flag, and they can be restored. Books online have a topic for each database. [Refer to this article.](#)



## REASON #4

### The TempDB database was moved incorrectly.

Moving the TempDB database is not a common activity. Sometimes a DBA might make a mistake while doing an ALTER DATABASE for the TempDB database. If SQL Server is not able to start system databases (master, model, and TempDB) correctly, the service startup will fail.

Let us assume we have moved TempDB to E:\TempDB using the below command while SQL is running.

```
ALTER DATABASE TEMPDB
MODIFY FILE (NAME = tempdev, FILENAME = 'E:\TempDB\tempdb.mdf')
```

Once the command is executed, we will receive the message below.

The file "tempdev" has been modified in the system catalog.  
The new path will be used the next time the database is started.

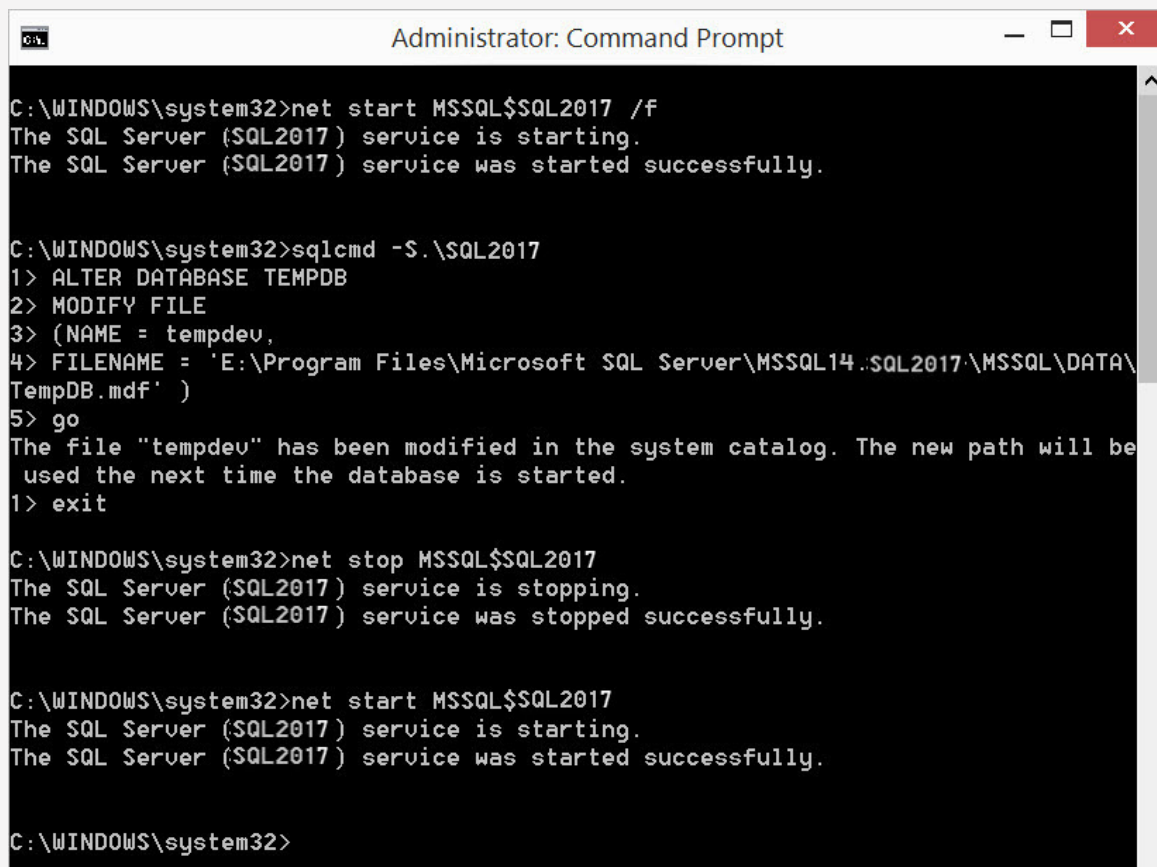
Now, if we restart SQL and assuming the configured path is invalid, we will get errors which we mentioned earlier. Here is the message output in our SQL Server ERRORLOG:

```
<Date Time>      spid11s      Clearing tempdb database.
<Date Time>      spid11s      Error: 5123, Severity: 16, State: 1.
<Date Time>      spid11s      CREATE FILE encountered operating system error 3
(The system cannot find the path specified.) while attempting to open or create the
physical file 'E:\TempDB\tempdb.mdf.'
<Date Time>      spid11s      Error: 17204, Severity: 16, State: 1.
<Date Time>      spid11s      FCB::Open failed: Could not open file E:\TempDB\tempdb.
mdf for file number 1. OS error: 3(The system cannot find the path specified.).
<Date Time>      spid11s      Error: 5120, Severity: 16, State: 101.
<Date Time>      spid11s      Unable to open the physical file "E:\TempDB\tempdb.
mdf". Operating system error 3: "3(The system cannot find the path specified.)".
<Date Time>      spid11s      Error: 1802, Severity: 16, State: 4.
<Date Time>      spid11s      CREATE DATABASE failed. Some file names listed could
not be created. Check related errors.
<Date Time>      spid11s      Could not create tempdb. You may not have enough disk
space available. Free additional disk space by deleting other files on the tempdb
drive and then restart SQL Server. Check for additional errors in the event log that
may indicate why the tempdb files could not be initialized.
```

## SOLUTION:

There are two ways to fix the problem of the TempDB path.

1. Either create the path which is shown in the error log.
2. Or start SQL Server using “f” parameter and ALTER DATABASE for TempDB and point to correct path as shown below.
  - a. Start SQL with /f using net start.
  - b. Connect to SQL via SQLCMD.
  - c. ALTER tempdb database.
  - d. Stop SQL.
  - e. Start SQL normally.



```
Administrator: Command Prompt

C:\WINDOWS\system32>net start MSSQL$SQL2017 /f
The SQL Server (SQL2017) service is starting.
The SQL Server (SQL2017) service was started successfully.

C:\WINDOWS\system32>sqlcmd -S.\SQL2017
1> ALTER DATABASE TEMPDB
2> MODIFY FILE
3> (NAME = tempdev,
4> FILENAME = 'E:\Program Files\Microsoft SQL Server\MSSQL14.SQL2017\MSSQL\DATA\
TempDB.mdf' )
5> go
The file "tempdev" has been modified in the system catalog. The new path will be
used the next time the database is started.
1> exit

C:\WINDOWS\system32>net stop MSSQL$SQL2017
The SQL Server (SQL2017) service is stopping.
The SQL Server (SQL2017) service was stopped successfully.

C:\WINDOWS\system32>net start MSSQL$SQL2017
The SQL Server (SQL2017) service is starting.
The SQL Server (SQL2017) service was started successfully.

C:\WINDOWS\system32>
```

## REASON #5

The Model Database has become corrupted.

Below are the various errors related to model database problems. They are taken from ERRORLOG file:

Database Files missing:

```
<Date Time>          spid10s      Starting up database 'model'.
<Date Time>          spid10s      Error: 17204, Severity: 16, State: 1.
<Date Time>          spid10s      FCB::Open failed: Could not open file E:\
Program Files\Microsoft SQL Server\MSSQL14.SQL2017\MSSQL\DATA\model.mdf for
file number 1.  OS error: 2(The system cannot find the file specified.).

<Date Time>          spid10s      Error: 5120, Severity: 16, State: 101.
<Date Time>          spid10s      Unable to open the physical file "E:\
Program Files\Microsoft SQL Server\MSSQL14.SQL2017\MSSQL\DATA\model.mdf".
Operating system error 2: "2(The system cannot find the file specified.)".

<Date Time>          spid10s      Error: 945, Severity: 14, State: 2.
<Date Time>          spid10s      Database 'model' cannot be opened due to
inaccessible files or insufficient memory or disk space.  See the SQL Server
errorlog for details.
```

Database File level Corruption:

```
<Date Time>          spid11s      Error: 824, Severity: 24, State: 2.
```

```
<Date Time>          spid11s      SQL Server detected a logical consistency-based I/O error: incorrect pageid (expected 1:32; actual 4096:0). It occurred during a read of page (1:32) in database ID 3 at offset 0x0000000040000 in file 'E:\Program Files\Microsoft SQL Server\MSSQL14.SQL2017\MSSQL\DATA\model.mdf'. Additional messages in the SQL Server error log or system event log may provide more detail. This is a severe error condition that threatens database integrity and must be corrected immediately. Complete a full database consistency check (DBCC CHECKDB). This error can be caused by many factors; for more information, see SQL Server Books Online.
```

```
<Date Time>          spid11s      Error: 945, Severity: 14, State: 2.
```

```
<Date Time>          spid11s      Database 'model' cannot be opened due to inaccessible files or insufficient memory or disk space. See the SQL Server errorlog for details.
```

## SOLUTION:

These are easy to fix provided we have not created any objects inside the model database.

There are multiple ways to fix the startup problem:

1. Restore the database from the backup taken on the same server. This requires SQL to be started via trace flag 3608 and 3609, so that system databases are not recovered.
2. Get the MDF and LDF file of the database from a different server having the same build version as the current server with the startup issue.
3. Repair the SQL Instance – again we would lose any objects created earlier.
4. Rebuild all system databases.

## REASON #6

The Port is being used by another SQL Instance on the same machine.

Changing the port of a SQL instance is not a day-to-day task but in some situations SQL Server startup might fail with these errors in ERRORLOG:

```
<Date Time>          spid15s      Error: 26023, Severity: 16, State: 1.
<Date Time>          spid15s      Server TCP provider failed to listen on
[ 'any' <ipv6> 1433]. Tcp port is already in use.

<Date Time>          spid15s      Error: 17182, Severity: 16, State: 1.
<Date Time>          spid15s      TDSSNIClient initialization failed with
error 0x2740, status code 0xa. Reason: Unable to initialize the TCP/IP listener.
Only one usage of each socket address (protocol/network address/port) is
normally permitted.

<Date Time>          spid15s      Error: 17182, Severity: 16, State: 1.
<Date Time>          spid15s      TDSSNIClient initialization failed with
error 0x2740, status code 0x1. Reason: Initialization failed with an
infrastructure error. Check for previous errors. Only one usage of each socket
address (protocol/network address/port) is normally permitted.

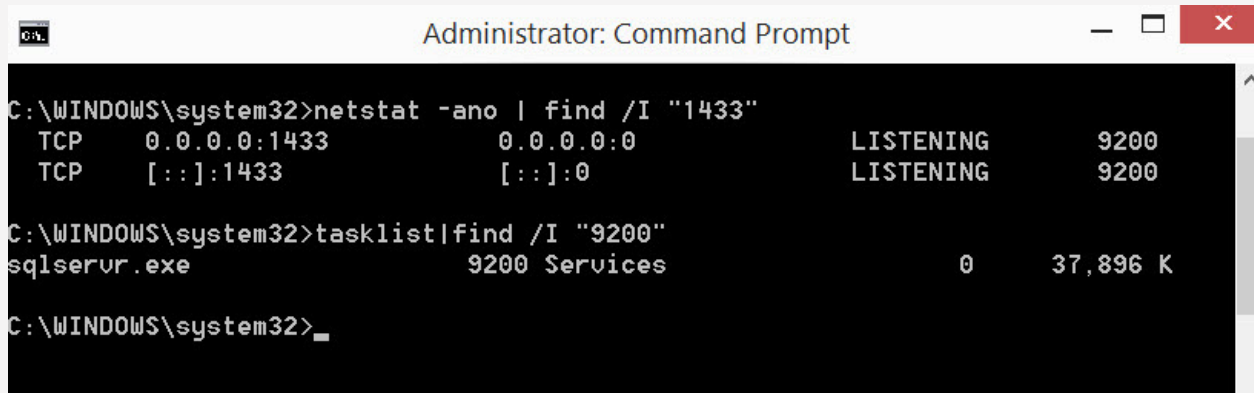
<Date Time>          spid15s      Error: 17826, Severity: 18, State: 3.
<Date Time>          spid15s      Could not start the network library because
of an internal error in the network library. To determine the cause, review
the errors immediately preceding this one in the error log.

<Date Time>          spid15s      Error: 17120, Severity: 16, State: 1.
<Date Time>          spid15s      SQL Server could not spawn
FRunCommunicationsManager thread. Check the SQL Server error log and the Windows
event logs for information about possible related problems.
```

Highlighted above is the actual problem of startup failure.

## SOLUTION:

From the command line, we need to find out which process is using port 1433. So first we can use netstat -on and find process id which is listening on that port. Then use tasklist to find which executable has the process id (found in the previous step). Here is a sample output:



```
Administrator: Command Prompt
C:\WINDOWS\system32>netstat -ano | find /I "1433"
TCP    0.0.0.0:1433      0.0.0.0:0       LISTENING   9200
TCP    [::]:1433      [::]:0         LISTENING   9200

C:\WINDOWS\system32>tasklist|find /I "9200"
sqlservr.exe           9200 Services           0      37,896 K

C:\WINDOWS\system32>
```

In this case, there is already another SQL Server Instance running and holding port 1433. To solve this, either change the port of that process or change the port of the SQL Server which is not getting started.

## REASON #7

### Simple Errors

If you are reading this reason, there is a good chance that you have not encountered any of the above errors. This means you have an error which may qualify as a simple error. Here are a few of the errors which are very simple and can be resolved very quickly.

- Check to make sure your SQL Server service is on.
- Ensure a firewall installed on your network allows connecting on the SQL Server port.
- Verify that your SQL Server is started and running.
- Confirm that you are using the correct name of the SQL Server service in your connection string.

## CONCLUSION

As we wrap up, we have seen 7 different reasons why the SQL Server Service can be unresponsive. Each of these reasons has a different method to resolve the issue, but all of them are easy to address if you know what to look for.

## ABOUT THE AUTHOR

Pinal Dave is a SQL Server Performance Tuning Expert and an independent consultant. He has authored 11 SQL Server database books and 21 Pluralsight courses, and has written over 4500 articles on database technology [on his blog](#). Along with 16+ years of hands-on experience, he holds a Masters of Science degree and a number of database certifications.

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