HOW TO

Set up Remote Desktop Manager Enterprise with a SQL Express Data Source on Linux





Microsoft SQL Server Express on Linux is a free shared Remote Desktop Manager data source option. It can be used as a replacement to local data source types (XML, SQLite) or the recently deprecated MySQL/MariaDB data sources.

Installing SQL Server Express on Linux

1. With your preferred terminal client, open an SSH session to the Linux server.

2. As the root user or a user with sudo privileges, import the GPG keys for Microsoft repositories, which allow for the installation of the necessary software packages.

wget -q0- <https://packages.microsoft.com/keys/microsoft.asc> | apt-key add -

root@linuxsql:~# wget -qO- https://packages.microsoft.com/keys/microsoft.asc | apt-key add -OK root@linuxsql:~#

Importing the GPG keys for the repository.

3. Next, add the Microsoft Package repository for Ubuntu 20.04, which is the server environment in use for this tutorial.

add-apt-repository "\$(wget -q0- https://packages.microsoft.com/config/ubuntu/20.04/mssql-server-2019.list)"

root@linuxsql:~# add-apt-repository "\$(wget -qO- https://packages.microsoft.com/config/ubuntu/20.04/mssql-server-2019.li
stj"
Get:1 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal InRelease [10.4 kB]
Hit:2 http://azure.archive.ubuntu.com/ubuntu focal InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu focal-backports InRelease
Get:5 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal/main armhf Packages [1660 B]
Get:6 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal/main arm64 Packages [1660 B]
Get:7 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal/main amd64 Packages [10.9 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Fetched 138 kB in 1s (220 kB/s)
Reading package lists Done
root@linuxsql:~#

Adding the Microsoft Software Package Repository.

4. Retrieve the updated list of packages with apt-get update and install the mssql-server package.

apt-get update apt-get install -y mssql-server

root@lipuxsql:~# ant-get update
Hit: 1 http://azure.archive.ubuntu.com/ubuntu.focal InRelease
Hit 2 http://azure archive ubuntu com/ubuntu focal-undates InBelease
lit: 3 http://azure.archive.ubuntu.com/ubuntu focal-backnorts InDelease
hit. https://azure.atchive.ubuntu.com/ubuntu/20 All/mscal_scavon_2010 face1 TpPolo250
Cote 5 http:// packages.microsoft.com/ubuncu/20.04/missql=Selvel-2019 fotal linetease
Get 5 http://security.ubuntu.com/ubuntu tocal-security inkelease [114 kB]
Fetched 114 kB in 15 (195 kB/s)
Reading package lists Done
root@linuxsql:~# apt-get install -y mssql-server
Reading package lists Done
Building dependency tree
Reading state information Done
The following additional packages will be installed:
gdb gdbserver libatomic1 libbabeltrace1 libc++1 libc++1-10 libc++abi1-10 libc6-dbg libcc1-0
libsasl2-modules-gssapi-mit libsss-nss-idmapθ
Suggested packages:
gdb-doc clang
The following NEW packages will be installed:
gdb gdbserver libatomic1 libbabeltrace1 libc++1 libc++1-10 libc++abi1-10 libc6-dbg libcc1-0
libsasl2-modules-gssapi-mit libsss-nss-idmap0 mssql-server
θ upgraded, 12 newly installed, θ to remove and θ not upgraded.

Updating Packages and Installing Microsoft SQL Express.

5. Run the initial Microsoft SQL Express setup wizard to set the following:

- 1. Server Edition: 3 (Express)
- 2. Accept the License Terms: Y
- 3. Set SA SQL Server System Administrator Password: A strong password

/opt/mssql/bin/mssql-conf setup

```
root@linuxsql:~# /opt/mssql/bin/mssql-conf setup
Choose an edition of SQL Server:
  1) Evaluation (free, no production use rights, 180-day limit)
  2) Developer (free, no production use rights)
 3) Express (free)
 4) Web (PAID)
 5) Standard (PAID)
 6) Enterprise (PAID) - CPU Core utilization restricted to 20 physical/40 hyperthreaded
 7) Enterprise Core (PAID) - CPU Core utilization up to Operating System Maximum
 8) I bought a license through a retail sales channel and have a product key to enter.
Details about editions can be found at
https://go.microsoft.com/fwlink/?LinkId=2109348&clcid=0x409
Use of PAID editions of this software requires separate licensing through a
Microsoft Volume Licensing program.
By choosing a PAID edition, you are verifying that you have the appropriate
number of licenses in place to install and run this software.
Enter your edition(1-8): 3
The license terms for this product can be found in
/usr/share/doc/mssgl-server or downloaded from:
https://go.microsoft.com/fwlink/?LinkId=2104294&clcid=0x409
The privacy statement can be viewed at:
https://go.microsoft.com/fwlink/?LinkId=853010&clcid=0x409
Do you accept the license terms? [Yes/No]:Yes
Enter the SQL Server system administrator password:
Confirm the SQL Server system administrator password:
```

Initial Configuration of SQL Express.

6. Verify that Microsoft SQL Express has been correctly installed and is currently running, with the below systemctl command.

systemctl status mssql-serverno-pager
root@linuxsql:~# systemctl status mssql-serverno-pager
mssql-server.service - Microsoft SQL Server Database Engine
Loaded: loaded (<u>/lib/systemd/system/mssql-server.service;</u> enabled; vendor preset: enabled)
Active: active (running) since Fri 2022-02-18 18:38:44 UTC; 18s ago
Docs: https://docs.microsoft.com/en-us/sql/linux
Main PID: 11150 (sqlservr)
Tasks: 130
Memory: 581.3M
CGroup: /system.slice/mssql-server.service
—11150 /opt/mssql/bin/sqlservr
└─11182 /opt/mssql/bin/sqlservr
Feb 18 18:38:49 linuxsql sqlservr[11182]: [65B blob data]
Feb 18 18:38:49 linuxsql sqlservr[11182]: [158B blob data]
Feb 18 18:38:49 linuxsql sqlservr[11182]: [155B blob data]
Feb 18 18:38:49 linuxsql sqlservr[11182]: [61B blob data]
Feb 18 18:38:49 linuxsql sqlservr[11182]: [96B blob data]
Feb 18 18:38:49 linuxsql sqlservr[11182]: [66B blob data]
Feb 18 18:38:50 linuxsql sqlservr[11182]: [96B blob data]
Feb 18 18:38:50 linuxsql sqlservr[11182]: [100B blob data]
Feb 18 18:38:50 linuxsql sqlservr[11182]: [71B blob data]
Feb 18 18:38:50 Linuxsql sqlservr[11182]: [124B blob data]
root@linuxsql:~#

Verifying that Microsoft SQL Express is correctly installed and running.

Install Microsoft SQL Tools, PowerShell, and PowerShell DbaTools

Not all of the below utilities may be needed in your setup, but can ease management and troubleshooting in the future. In particular, the <u>PowerShell</u> <u>DbaTools</u> module makes managing users and databases far more convenient, as you will see later in this tutorial.

1. First, install the <u>curl</u> (command-line utility for making web requests) package and add the general Microsoft package repository information.

apt install curl
curl https://packages.microsoft.com/config/ubuntu/20.04/prod.list | tee /etc/apt/sources.list.
d/msprod.list

root@linuxsql:~# apt install curl
Reading package lists Done
Building dependency tree
Reading state information Done
curl is already the newest version (7.68.0-lubuntu2.7).
curl set to manually installed.
θ upgraded, θ newly installed, θ to remove and θ not upgraded.
root@linuxsql:~# curl https://packages.microsoft.com/config/ubuntu/20.04/prod.list tee /etc/apt/sources.list.d/msprod.
list
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 89 100 89 0 0 1271 0::: 1271
deb [arch=amd64,armhf,arm64] https://packages.microsoft.com/ubuntu/20.04/prod focal main

Installing CURL and adding the general Microsoft package repository.

2. Next, install the MSSQL tools and unixODBC developer tools packages. You will be prompted to accept the license terms for both tools.

apt-get update
apt-get install mssql-tools unixodbc-dev

root@linuxsql:~# apt-get update Hit:1 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal InRelease Get:2 https://packages.microsoft.com/ubuntu/20.04/prod focal InRelease [10.5 kB] Hit:3 http://azure.archive.ubuntu.com/ubuntu focal InRelease Get:4 http://azure.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB] Get:5 http://azure.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB] Get:6 http://security.ubuntu.com/ubuntu/focal-backprod focal/main arm64 Packages [20.6 kB] Get:7 https://packages.microsoft.com/ubuntu/20.04/prod focal/main arm64 Packages [20.6 kB] Get:9 https://packages.microsoft.com/ubuntu/20.04/prod focal/main arm64 Packages [132 kB] Get:0 https://packages.microsoft.com/ubuntu/20.04/prod focal/main arm64 Packages [17.4 kB] Get:10 http://azure.archive.ubuntu.com/ubuntu focal-updates/main arm64 Packages [1581 kB] Fetched 2098 kB in 1s (2428 kB/s) Reading package lists ... Done root@linuxsql:~# apt-get install mssql-tools unixodbc-dev Reading package lists ... Done Building dependency tree Reading state information... Done The following additional packages will be installed: autoconf automake autotools-dev binutils binutils-common binutils-x86-64-linux-gnu cpp cpp-9 gcc gcc-9 gcc-9-base libasan5 libbinutils libc-dev-bin libc6-dev libcrypt-dev libctf-nobfd0 libctf0 libgcc-9-dev libgomp1 libisl22 libitml liblsan0 libltdl-dev libmpc3 libodbc1 libquadmath0 libtool libtsan0 libubsan1 linux-libc-dev m4 manpages-dev msodbcsql17 odbcinst odbcinst1debian2 unixodbc msourcefti oubcante obtaining autoconf-doc gettext binutils-doc cpp-doc gcc-9-locales gcc-multilib make flex bison autoconf-archive gnu-standards autoconf-doc gettext binutils-doc cpp-doc gcc-9-locales gcc-multilib make flex bison gcc-doc gcc-9-multilib gcc-9-doc glibc-doc libtool-doc unixodbc-bin gfortran | fortran95-compiler gcj-jdk m4-doc The following NEW packages will be installed: autoconf automake autocools-dev binutils binutils-common binutils-x86-64-linux-gnu cpp cpp-9 gcc gcc-9 gcc-9-base libasan5 libbinutils libc-dev-bin libc6-dev libcrypt-dev libctf-nobfd0 libctf0 libgcc-9-dev libgomp1 libisl22 libitm1 liblsan0 libltdl-dev libmpc3 libodbc1 libquadmath0 libtool libtsan0 libubsan1 linux-libc-dev m4 manpages-dev msodbcsql17 mssql-tools odbcinst odbcinst1debian2 unixodbc unixodbc-dev θ upgraded, 39 newly installed, θ to remove and 2 not upgraded. Need to get 34.6 MB of archives. After this operation, 145 MB of additional disk space will be used. Do you want to continue? [Y/n] Y

Installing MSSQL tools and the unixODBC developer tools.



Accepting the license terms for the unixODBC developer tools.

Configuring mssc	ql-tools
The license terms for this product can be downloaded from H found in /usr/share/doc/mssql-tools/LICENSE.TXT.	http://go.microsoft.com/fwlink/?LinkId=746949 and
By choosing 'Yes', you indicate that you accept the license	e terms.
Do you accept the license terms?	
<yes></yes>	<no></no>

Accepting the license terms for the MSSQL tools.

3. Modify the Bash shell for both interactive and non-interactive sessions to add the MSSQL tools in the path. The source ~/.bashrc command essentially reloads the session you are in to utilize the path changes without a logging off and then back on.

```
echo 'export PATH="$PATH:/opt/mssql-tools/bin"' >> ~/.bash_profile
echo 'export PATH="$PATH:/opt/mssql-tools/bin"' >> ~/.bashrc
source ~/.bashrc
```

```
root@linuxsql:~# echo 'export PATH="$PATH:/opt/mssql-tools/bin"' >> ~/.bash_profile
root@linuxsql:~# echo 'export PATH="$PATH:/opt/mssql-tools/bin"' >> ~/.bashrc
root@linuxsql:~# source ~/.bashrc
root@linuxsql:~#
```

Adding the MSSQL tools to the path.

4. Before installing PowerShell, the wget (command-line web requests), apt-transport-https (SSL secured APT package requests), and the software-properties-common (APT package management scripts) packages must be installed. Next, download and install the dpkg containing the necessary sources to install PowerShell.

```
apt-get install -y wget apt-transport-https software-properties-common
wget -q https://packages.microsoft.com/config/ubuntu/20.04/packages-microsoft-prod.deb
dpkg -i packages-microsoft-prod.deb
apt-get update
```

```
root@linuxsql:~# apt-get install -y wget apt-transport-https software-properties-common
Reading package lists... Done
Building dependency tree
Reading state information ... Done
software-properties-common is already the newest version (0.99.9.8).
software-properties-common set to manually installed.
wget is already the newest version (1.20.3-1ubuntu2).
wget set to manually installed.
The following NEW packages will be installed:
 apt-transport-https
θ upgraded, 1 newly installed, θ to remove and 2 not upgraded.
Need to get 4680 B of archives.
After this operation, 162 kB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe amd64 apt-transport-https all 2.0.6 [4680 8]
Fetched 4680 B in 0s (39.1 kB/s)
Selecting previously unselected package apt-transport-https.
(Reading database ... 65227 files and directories currently installed.)
Preparing to unpack .../apt-transport-https_2.0.6_all.deb ...
Unpacking apt-transport-https (2.0.6) ..
Setting up apt-transport-https (2.0.6) ..
root@linuxsql:~# wget -q https://packages.microsoft.com/config/ubuntu/20.04/packages-microsoft-prod.deb
root@linuxsql:~# dpkg -i packages-microsoft-prod.deb
Selecting previously unselected package packages-microsoft-prod.
(Reading database ... 65231 files and directories currently installed.)
Preparing to unpack packages-microsoft-prod.deb
Unpacking packages-microsoft-prod (1.0-ubuntu20.04.1)
Setting up packages-microsoft-prod (1.0-ubuntu20.04.1) ...
root@linuxsql:~# apt-get update
Hit:1 http://azure.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:4 https://packages.microsoft.com/ubuntu/20.04/mssql-server-2019 focal InRelease
Hit:5 https://packages.microsoft.com/ubuntu/20.04/prod focal InRelease
Get:6 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Fetched 114 kB in 1s (147 kB/s)
Reading package lists... Done
```

Installing the necessary prerequisite packages for PowerShell.

5. Install the latest version of PowerShell which is 7.2.1 in this tutorial.

apt-get install -y powershell

```
root@linuxsql:~# apt-get install -y powershell
Reading package lists... Done
Building dependency tree
Reading state information ... Done
The following NEW packages will be installed:
 powershell
\boldsymbol{\theta} upgraded, 1 newly installed, \boldsymbol{\theta} to remove and 2 not upgraded.
Need to get 69.7 MB of archives.
After this operation, 193 MB of additional disk space will be used.
Get:1 https://packages.microsoft.com/ubuntu/20.04/prod focal/main amd64 powershell amd64 7.2.1-1.deb [69.7 MB]
Fetched 69.7 MB in 1s (49.6 MB/s)
Selecting previously unselected package powershell.
(Reading database ... 65239 files and directories currently installed.)
Preparing to unpack .../powershell_7.2.1-1.deb_amd64.deb ...
Unpacking powershell (7.2.1-1.deb) ...
Setting up powershell (7.2.1-1.deb) ...
Processing triggers for man-db (2.9.1-1) ...
root@linuxsql:~#
```

Installing PowerShell.

6. Launch PowerShell with the pwsh command to open a new session for module installation.



Launch the PowerShell session.

7. Install the dbatools module with the Install-Module command. Accept the installation from the PSGallery either every time with A or one time with Y.



Installing the dbatools module.

Opening up the SQL Networking Port in Azure Networking

In this tutorial, the Linux server is hosted in Azure therefore it is necessary to open the SQL ports, 1433, for clients to connect to. This will be similar for other systems, either internal on a server via UFW or IPTables, or any other firewall products.

1. Navigate to the Networking section for the Linux SQL box and choose to add a new Inbound Port Rule.

= Microsoft Azure		2	P Search resources, servic	es, and docs (G+/)				7 🖉 🐵 💿 ;	
Home > Virtual machines > inused Virtual machines	ĸ	📀 linuxsql Networki	ng						×
Adaminis Kannyan + Crast v 22 Safeh to chasie Filter for any feld Name 1, 		Virtual motion Stanch (Chir) Conview Activity Top Activity Top Activity Top Activity Top Disprose and solve problems Cettings	Attach network Innung(361 IP configuration () ipconfig 1 (Prmary Network Intert Virtual network/sub Inbound port rul	Interface & Detach notiversk interface R Fee	froubleshoot VM o	onnection issues Topolog Private IP: 172.1609 Accele balancing	r (c) rated networking: Disabled		
C investi C analytics		2 Networking Ø Connect	Network security in pacts 0 submitted	rity group Inuxed-nsg (attached to network int atts. 1 network interfaces	erface: linuxiq(361)				Add inboand port rale
₩ weekel		Cluis Cluis Control Security Advisor recommendations Extensions + applications Controlucus delivery Autility + scaling Controlucus delivery Controlucus del	Priority 500 65001 65001 65000 Understand Asure Ici Quebstant Cinade a p Quebstant Direct we	Name A Sti A downstrikeund A downstrikeund A downstrikeund B downstrikeund brygklitheund brygklithe	Port 22 Any Any Any es of	Protocol TCP Any Any Any	Source Ary VinsaNetwork AzureLoadBalancer Ary	Destination Any VrtualNetwork Any Any	Action Action Action Action Action Action Action Action Comparison Action Comparison Action Action
< Page 1 v of 1 >		Operations Sector							

2. Add the port exemption with the following values, or changed to be appropriate for your environment.

- **1. Source**: Service Tag Predefined lists of sources.
- 2. Source service tag: VirtualNetwork Internal Azure networks, instead of opening to the general internet.
- 3. Source port ranges: * Allow any incoming port requests.
- **4. Destination**: Any As this rule only applies to this single server, all traffic is directed to that system only.
- 5. Service: MS SQL This allows only port 1433 on the destination.
- 6. Action: Allow (allow the traffic)
- 7. Priority: 310 Decides in what order to evaluate the rules.
- 8. Name: MSSQL A descriptive name.

Sec. 1
and the second se
Anna Carrie
Cont Bart
The second second
1 1 2 3

Add inbound security rule	
Service Tag	~
Service lag	Ť
Source service tag * 🕕	
VirtualNetwork	~
Source port ranges * ①	
*	
Destination ①	
Any	~
Service ①	
MS SQL	~
1422	
1455	
Protocol	
O Any	
• тср	
UDP	
Action	
 Allow 	

Priority * 🛈	
310	
Name *	
MSSQL	~
Description	
Add Cancel	

Configuring the priority and name of the SQL.



3. Finally, verify that the MSSQL port exemption was added in the network security group for the Linux server.

Inbound port rul	es Outbound port rules Application secu	urity groups Load b	alancing				
Network secure Impacts 0 subn	rity group linuxsql-nsg (attached to network inte ets, 1 network interfaces	erface: linuxsql361)				Add inbound	d port rule
Priority	Name	Port	Protocol	Source	Destination	Action	
300	A SSH	22	TCP	Any	Any	 Allow 	
310	MSSQL	1433	TCP	VirtualNetwork	Any	Allow	
65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	 Allow 	
65001	AllowAzureLoadBalancerinBound	Any	Any	AzureLoadBalancer	Any	 Allow 	
65500	DenyAllinBound	Any	Any	Any	Any	Oeny	

Verifying that the port rule was added correctly.

Add the Microsoft SQL Server Data Source to RDM

With the MSSQL configured, you now have an empty database. The easiest way to configure this database for use with RDM is through the RDM client itself.

1. In RDM, navigate to File → Data Sources → Add New → Microsoft SQL Server.

Data Sources	Enter text to search	Find
all Individual	Individual Devolutions Online Drive	Devolutions Password Hub Personal
	Dropbox	Google Drive
	QLite	XML XML
	Team Devolutions Password Hub Business	Devolutions Server
	Microsoft Azure SQL	Microsoft SQL Server

Adding the Microsoft SQL Server data source.

2. Enter in the following values to configure the connection for the MSSQL server, once completed click **Test Host** to verify that the connection works, but do not click **OK** to save the connection yet, continue to the next step.

- 1. Name: SQL Server
 - 1. Type: Microsoft SQL Server
- 2. Host: <DNS or IP Address of Server>
- 3. Login Mode: Database login
- 4. Username: sa
- 5. Password: <Account Password>

	e Desktop Manager - Microsoft SC	Microsoft SQL Server		
General	Settings User Vault	Upgrade VPN Advanced		
	Name	SQL Server	Microsoft SQL Server 👻	
	Host	172.16.0.9		
	Login mode	Database login	•	
	Username	sa		
	Password	Always ask password Allow change username		
	Database			
	Two factor	None	Test Host Test Database	_
D 6575	0F11-5E9C-4C27-88D3	-160D5F491BF2	OK Can	ce

Configuring the connection.



Testing the host connection.

3. Navigate to the Upgrade tab to create the database.

General	Settings	User Vault	Upgrade	VPN A	dvanced				
				Tes	t Host				
				Create	Database				
				Update	Database				
				Validate	Database				
				Test [atabase				
				Email Sche	na to Suppo	rt			
			View Upo	rade Script		8			

Creating the database from the Upgrade tab.

1. Click the **Create Database** button and enter a name, Devolutions is used in this tutorial.

Remote Desktop Manager - SQL Server						
SQL	Server					
Database name	Devolutions					
	OK Can	icel				

Entering the database name.

2. Next, choose the settings for the database (here the defaults are used), and click **OK** to move on to initializing the data source.

🔲 Remote Desktop Manager - Create database		×	
Se Create database			
✓ Create vault with restricted access by default			
Allow templates (local)			
Allow local password templates			
Allow sub connections			
Allow virtual folders			
Use legacy security			
✓ Enable compromised password (pwned) check by default			
그는 것 같은 것 같			
	OK	Cano	el
Choosing the default settings for the database.			

3. When prompted, choose **Automatic** for version management, and if successful, the following message stating that: "Database creation successful".



Choosing to automatically version the database.



Verifying that the database was created successfully.

- **4.** Once done, it is time to validate the settings and save the database.
 - 1. On the **General** tab, click the **Test Database** button.



Testing the database connection.

2. Next, click the **Validate Database** button, to verify that the structure is as expected.



3. Finally, click **OK** to save the Data Source connection.

Remo	te Desktop	Manager - M	icrosoft SQ	L Serve	2 r				
.e	witcros		_ Serve						
General	Settings	User Vault	Upgrade	VPN	Advanced				
A									
A	Name		SQL Ser	ver		Microsoft	SQL Server	*	
	Host		172.16.	0.9		 			
	Login mod	le	Databas	se <mark>log</mark> in		-			
	licername		-						
	Deemord		Sd			_			
	Password		•••••		•••••				
				ys ask pa	username				
				change	username				
	Database		Devolut	ions		 	Test	lost	
	Two facto	or	None				Test Dat	tabase	-
							i est Dal	labase	
657	50F11-5E9C-	4C27-88D3-16	50D5F491BF	2			OK	Cano	el

Saving the Data Source connection.

Modifying SQL Login User

Instead of leaving the superuser, sa, account as the primary authentication account for the data source connection, it is best to create a specific user. For this, you can use the PowerShell module DbaTools on the Linux SQL Server box.

1. Open a PowerShell session by entering pwsh on the Bash command line. Next, Import the DbaTools module via the following command.

Import-Module DbaTools



Importing the DbaTools command.

2. Next, create a credential object, using the sa account, to the SQL Express instance listening on localhost. Use the Connect-Dbalnstance to create a connection to the MS SQL server, and verify the connection by displaying the \$SQLServer variable on the command line.

```
$Credentials = Get-Credential -UserName 'sa'
 $SQLServer = Connect-DbaInstance -SqlInstance 'localhost' -SqlCredential $Credentials
 $SQLServer
PS /root> $Credentials = Get-Credential -UserName 'sa'
PowerShell credential request
Enter your credentials.
PS /root> $SQLServer = Connect-DbaInstance -SqlInstance 'localhost' -SqlCredential $Credentials
PS /root> $SQLServer
ComputerName Name
                                                HostPlatform IsAzure IsClustered ConnectedAs
                    Product
                                       Version
localhost
           linuxsql Microsoft SQL Server 15.0.4198 Linux
                                                             False
                                                                    False
                                                                               sa
PS /root>
```

Connecting to the MS SQL server.

3. Next, save the credentials for a new SQL login with the name of devolutions and a secure password. Finally, create the login via New-DbaLogin passing in the necessary variables as shown below.

\$SQLCredentia	l = Get-Credential -UserName 'devolutions'
New-DbaLogin	-SQLInstance \$SQLServer -Login \$SQLCredential.UserName -SecurePassword
\$SQLCredentia	l.Password
PS /root> \$SQLCrede	ntial = Get-Credential -UserName 'devolutions'
PowerShell credenti	al request
Enter your credenti	Lals.
Password for user o	levolutions: *******************
PS /root> New-Dbalo	ogin -SQLInstance \$SQLServer -Login \$SQLCredential.UserName -SecurePassword \$SQLCredential.Password
ComputerName InstanceName IglInstance Jame OginType CreateDate LastLogin HaSAccess ISLocked ISDisabled MustChangePassword	: localhost : MSSQLSERVER : linuxsql : devolutions : SqlLogin : 02/18/2022 20:52:51 : : True : True : False : False : False : False

Creating a new SQL Login.

4. Next, you must create a specific Database User from the previously created SQL login with the New-DbaDbUser command.

New-DbaDbUser -Sql	lInstance \$SQLServer -Database 'devolutions' -Login 'devolutions'
PS /root> New-DbaD	bUser -SqlInstance \$SQLServer -Database 'devolutions' -Login 'devolutions'
ComputerName InstanceName SqlInstance Database CreateDate DateLastModified Name Login LoginType AuthenticationType State HasDbAccess	<pre>: localhost : MSSQLSERVER : linuxsql : Devolutions : 02/18/2022 21:04:12 : 02/18/2022 21:04:12 : devolutions : devolutions : devolutions : SqLLogin : Instance : Existing : True</pre>
DefaultSchema	: dbo

Creating a Database user from the SQL login.

5. Add the db_owner role to the devolutions user with the Add-DbaDbRoleMember command.

Add-DbaDbRoleMember -SqlInstance \$SQLServer -Database 'devolutions' -Role 'db_owner' -User 'devolutions'

PS /root> Add-DbaDbRoleMember -SqlInstance \$SQLServer -Database 'devolutions' -Role 'db_owner' -User 'devolutions' Confirm Are you sure you want to perform this action? Performing the operation "Adding User devolutions to role: [db_owner] in database [Devolutions]" on target "[linuxsql]". [Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "Y"): Y

Adding the db_owner role to the Devolutions user.

6. Add the MSSQL server role securityadmin, which, in conjunction with database owner rights, allows the account the ability to GRANT, DENY, or REVOKE server-level and database-level permissions.

Add-DbaServerRoleMember -SqlInstance \$SQLServer -ServerRole 'securityadmin' -Login 'devolutions'

PS /root> Add-DbaServerRoleMember -SqlInstance \$SQLServer -ServerRole 'securityadmin' -Login 'devolutions' Confirm Are you sure you want to perform this action? Performing the operation "Adding login devolutions to server-level role: [securityadmin]" on target "[linuxsql]". [Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "Y"): A

Granting the securityadmin role to the devolutions user.

7. In the RDM client, navigate to the MS SQL Server Data Source, click the **Edit** button, change the username and password to the user that was just created, and click **Test Database**.

Remote Desktop F	anager - Microsoft SQL Server			
General Settings	Jser Remote Desktop Manager	×		
Name	Connection to the database successful		ft SQL Server 👻	
Host				
Login mode	OK			
Username	devolutions			
Password	•••••			
	Always ask password			
	Allow change username			
Database	Devolutions			
Two factor	None		Test Host	
			Test Database	
65750F11-5E9C-4	27-88D3-160D5F491BF2		OK Can	cel

Modifying the user used for the Data Source connection.

Adding a New User

What if you need to add a new limited user with access to the MSSQL data source? Utilize the built-in administrative capabilities of the RDM client.

1. Switch to the MSSQL Data Source and navigate to **Administration → Users**.



Accessing the Users administrative tool.

2. Click the + (plus) sign to add a new user.



Adding a new user.

3. Enter in the following details, and click **OK** to save the user.

- 1. Authentication Type: Database
- 2. Username: testlimiteduser
- 3. Password: <Strong Password>
- 4. User Type: User
- 5. User License Type: Default

General	General			
User Groups	ID	16BDCB1B-CC5D-44C6-/	A958-3C50FD849403	
Application Access	Authentication type	Database	•]
Settings	Username	limitedtestuser		Integrated security
Information	✓ Password	•••••	•	✓ Create database login/user
	User type	User	-	
	User license type	Default	-	
		User must change pas	sword at next logon	
	Information ———			
	First name		Last name	
	Email			

Entering the new user details.

4. Verify that the user now shows in the User list.

Remote Desktop Manag	ger - User and Security Management	_ >
🕥 User and S	Security Management	
Management	+ 💶 🖍 🗙 💷 🔒 🕋 ≻ 📰 👪 📿 Filter	9 م
🔒 Users	Image Login 🖭 Name Email	
鵅 User Groups	devolutions	
Vaults	u limitedtestuser	
	sa sa	
	•	
		Close

Verifying that the new user exists.