



VISCOSITY
NORTH AMERICA

SQL SERVER INSTALLATION AND
CONFIGURATION ON RED HAT LINUX

Details to the Presentation

INSTALLING SQL SERVER ON RED HAT LINUX

```
[ckim@sql100 .ssh]$ sudo curl -o /etc/yum.repos.d/mssql-server.repo
https://packages.microsoft.com/config/rhel/7/mssql-server-2017.repo
[sudo] password for ckim:
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100  232  100  232    0    0   387      0  --:--:--  --:--:--  --:--:--   387
[ckim@sql100 .ssh]$ sudo yum install -y mssql-server
Loaded plugins: langpacks, product-id, search-disabled-repos, subscription-manager
This system is not registered with an entitlement server. You can use subscription-manager to
register.
packages-microsoft-com-mssql-server-2017                | 2.9 kB  00:00:00
packages-microsoft-com-mssql-server-2017/primary_db    | 9.1 kB  00:00:00
Resolving Dependencies
--> Running transaction check
---> Package mssql-server.x86_64 0:14.0.3022.28-2 will be installed
--> Finished Dependency Resolution
```

Dependencies Resolved

```
=====
Package           Arch      Version                               Repository                               Size
=====
Installing:
mssql-server      x86_64    14.0.3022.28-2                       packages-microsoft-com-mssql-server-2017 167 M
=====
```

Transaction Summary

```
=====
Install 1 Package
=====
```

```
Total download size: 167 M
Installed size: 167 M
Downloading packages:
warning: /var/cache/yum/x86_64/7Server/packages-microsoft-com-mssql-server-2017/packages/mssql-
server-14.0.3022.28-2.x86_64.rpm: Header V4 RSA/SHA256 Signature, key ID be1229cf: NOKEY
Public key for mssql-server-14.0.3022.28-2.x86_64.rpm is not installed
mssql-server-14.0.3022.28-2.x86_64.rpm                | 167 MB  00:02:38
```

Retrieving key from <https://packages.microsoft.com/keys/microsoft.asc>

Importing GPG key 0xBE1229CF:

```
Userid      : "Microsoft (Release signing) <gggsecurity@microsoft.com>"
Fingerprint: bc52 8686 b50d 79e3 39d3 721c eb3e 94ad be12 29cf
From        : https://packages.microsoft.com/keys/microsoft.asc
```

Running transaction check

Running transaction test

Transaction test succeeded

Running transaction

```
Installing : mssql-server-14.0.3022.28-2.x86_64                1/1
```

```
+-----+
Please run 'sudo /opt/mssql/bin/mssql-conf setup'
to complete the setup of Microsoft SQL Server
+-----+
```

SQL Server needs to be restarted in order to apply this setting. Please run
'systemctl restart mssql-server.service'.

```
Verifying : mssql-server-14.0.3022.28-2.x86_64                1/1
```

Installed:

```
mssql-server.x86_64 0:14.0.3022.28-2
```



Complete!

SQL SERVER CONFIGURATION

```
[ckim@sql100 ~]$ sudo /opt/mssql/bin/mssql-conf setup
[sudo] password for ckim:
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)
  7) Enterprise Core (PAID)
  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=852748&clid=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): 2
The license terms for this product can be found in
/usr/share/doc/mssql-server or downloaded from:
https://go.microsoft.com/fwlink/?LinkId=855862&clid=0x409
```

The privacy statement can be viewed at:
<https://go.microsoft.com/fwlink/?LinkId=853010&clid=0x409>

```
Enter the SQL Server system administrator password:
Confirm the SQL Server system administrator password:
Configuring SQL Server...
```

Created symlink from /etc/systemd/system/multi-user.target.wants/mssql-server.service to /usr/lib/systemd/system/mssql-server.service.
Setup has completed successfully. SQL Server is now starting.

CHECK ON THE STATUS OF THE INSTALL AND CONFIG

```
[ckim@sql100 ~]$ systemctl status mssql-server
● mssql-server.service - Microsoft SQL Server Database Engine
  Loaded: loaded (/usr/lib/systemd/system/mssql-server.service; enabled; vendor
  preset: disabled)
  Active: active (running) since Sat 2018-03-17 23:11:25 CDT; 9min ago
  Docs: https://docs.microsoft.com/en-us/sql/linux
```



```
Main PID: 2946 (sqlservr)
  CGroup: /system.slice/mssql-server.service
          └─2946 /opt/mssql/bin/sqlservr
          └─2992 /opt/mssql/bin/sqlservr
```

```
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.31 Server S...].
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.31 Server S...].
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.33 Server D...4.
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.34 spid19s S...d.
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.47 spid11s S...'.
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.58 spid11s T...).
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.59 spid22s T...e.
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.59 spid22s T...e.
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.59 spid22s S...d.
Mar 17 23:11:28 sql100 sqlservr[2946]: 2018-03-17 23:11:28.61 spid6s R...d.
Hint: Some lines were ellipsized, use -l to show in full.
```

OPEN FIREWALL

```
[sudo] password for ckim:
success
[ckim@sql100 ~]$ sudo firewall-cmd --reload
success
[ckim@sql100 ~]$ sudo firewall-cmd --zone=public --add-port=1433/tcp --permanent
success
[ckim@sql100 ~]$ sudo firewall-cmd --reload
success

[ckim@sql100 ~]$ sudo firewall-cmd --zone=public --list-ports
[sudo] password for ckim:
1433/tcp 22/tcp
```

REMOVE PORT 22

```
[ckim@sql100 ~]$ firewall-cmd --remove-port=22/tcp
success
[ckim@sql100 ~]$ $ firewall-cmd --runtime-to-permanent
bash: $: command not found...
[ckim@sql100 ~]$ firewall-cmd --runtime-to-permanent
success
[ckim@sql100 ~]$ sudo firewall-cmd --reload
success
```



SETUP LOCAL YUM REPOSITORY

```
$ pwd
/run/media/ckim/RHEL-7.4 Server.x86_64
```

```
$ cat .discinfo
1499751070.690815
Red Hat Enterprise Linux 7.4
x86_64
1
```

```
[root@sql100 ~]# cat /etc/yum.repos.d/viscosity.repo
[viscosity]
mediaid=1499751070.690815
name=Local Viscosity Repo
baseurl="file:///run/media/ckim/RHEL-7.4 Server.x86_64/"
enabled=1
gpgcheck=no
```

[root@sql100 ~]# yum repolist

```
Loaded plugins: langpacks, product-id, search-disabled-repos, subscription-manager
This system is not registered with an entitlement server. You can use subscription-
manager to register.
Repository packages-microsoft-com-prod is listed more than once in the configuration
repo id                                repo name
status
packages-microsoft-com-mssql-server-2017  packages-
microsoft-com-mssql-server-2017          21
packages-microsoft-com-prod              packages-
microsoft-com-prod                        113
viscosity                                Local Viscosity
Repo                                       4,986
repolist: 5,120
```

```
$ sudo curl -o /etc/yum.repos.d/msprod.repo
https://packages.microsoft.com/config/rhel/7/prod.repo
[sudo] password for ckim:
```

% Total	% Received	% Xferd	Average Speed	Time	Time	Time	Current	
			Dload	Upload	Total	Spent	Left	Speed
100	193	100	193	0	0	587	0	---

INSTALL MSSQL TOOLS

```
[root@sql100 Packages]# sudo yum install mssql-tools unixODBC-devel
Loaded plugins: langpacks, product-id, search-disabled-repos, subscription-manager
```



```

This system is not registered with an entitlement server. You can use subscription-
manager to register.
Repository packages-microsoft-com-prod is listed more than once in the configuration
Resolving Dependencies
--> Running transaction check
---> Package mssql-tools.x86_64 0:17.0.1.1-1 will be installed
--> Processing Dependency: msodbcsql17 < 17.1.0.0 for package: mssql-tools-17.0.1.1-
1.x86_64
--> Processing Dependency: msodbcsql17 >= 17.0.0.1 for package: mssql-tools-
17.0.1.1-1.x86_64
---> Package unixODBC-devel.x86_64 0:2.3.1-11.el7 will be installed
--> Processing Dependency: unixODBC(x86-64) = 2.3.1-11.el7 for package: unixODBC-
devel-2.3.1-11.el7.x86_64
--> Processing Dependency: libesobS.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Processing Dependency: libmimerS.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Processing Dependency: libnn.so.2()(64bit) for package: unixODBC-devel-2.3.1-
11.el7.x86_64
--> Processing Dependency: libodbccr.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Processing Dependency: libodbcdrvfcglS.so.2()(64bit) for package: unixODBC-
devel-2.3.1-11.el7.x86_64
--> Processing Dependency: libodbcdrvfcg2S.so.2()(64bit) for package: unixODBC-
devel-2.3.1-11.el7.x86_64
--> Processing Dependency: libodbcminiS.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Processing Dependency: libodbcnnS.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Processing Dependency: libodbctxtS.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Processing Dependency: liboplodbcS.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Processing Dependency: liboraodbcS.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Processing Dependency: libsapdbS.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Processing Dependency: libtdsS.so.2()(64bit) for package: unixODBC-devel-2.3.1-
11.el7.x86_64
--> Processing Dependency: libtemplate.so.2()(64bit) for package: unixODBC-devel-
2.3.1-11.el7.x86_64
--> Running transaction check
---> Package msodbcsql17.x86_64 0:17.0.1.1-1 will be installed
---> Package unixODBC.x86_64 0:2.3.1-11.el7 will be installed
--> Finished Dependency Resolution

```

Dependencies Resolved

```

=====
=====
Package                Arch                Size                Version
Repository
=====
=====

```

Installing:

mssql-tools	x86_64		17.0.1.1-1
packages-microsoft-com-prod		253 k	
unixODBC-devel	x86_64		2.3.1-11.el7
viscosity		55 k	
Installing for dependencies:			
msodbcsql17	x86_64		17.0.1.1-1
packages-microsoft-com-prod		4.1 M	
unixODBC	x86_64		2.3.1-11.el7
viscosity		413 k	

Transaction Summary

=====

Install 2 Packages (+2 Dependent packages)

Total download size: 4.8 M
 Installed size: 5.7 M
 Is this ok [y/d/N]: y
 Downloading packages:
 (1/2): mssql-tools-17.0.1.1-1.x86_64.rpm
 | 253 kB 00:00:00
 (2/2): msodbcsql17-17.0.1.1-1.x86_64.rpm
 | 4.1 MB 00:00:01

Total
 3.5 MB/s | 4.8 MB 00:00:01
 Running transaction check
 Running transaction test
 Transaction test succeeded
 Running transaction
 Installing : unixODBC-2.3.1-11.el7.x86_64
 1/4
 The license terms for this product can be downloaded from
<https://aka.ms/odbc170eula> and found in
 /usr/share/doc/msodbcsql17/LICENSE.txt . By entering 'YES',
 you indicate that you accept the license terms.

Do you accept the license terms? (Enter YES or NO)
 YES
 Installing : msodbcsql17-17.0.1.1-1.x86_64
 2/4
 The license terms for this product can be downloaded from
<http://go.microsoft.com/fwlink/?LinkId=746949> and found in
 /usr/share/doc/mssql-tools/LICENSE.txt . By entering 'YES',
 you indicate that you accept the license terms.

Do you accept the license terms? (Enter YES or NO)
 YES
 Installing : mssql-tools-17.0.1.1-1.x86_64
 3/4
 Installing : unixODBC-devel-2.3.1-11.el7.x86_64
 4/4
 viscosity/productid
 | 1.6 kB 00:00:00

```
Verifying : msodbcsql17-17.0.1.1-1.x86_64
1/4
Verifying : unixODBC-devel-2.3.1-11.e17.x86_64
2/4
Verifying : mssql-tools-17.0.1.1-1.x86_64
3/4
Verifying : unixODBC-2.3.1-11.e17.x86_64
4/4
```

Installed:

```
mssql-tools.x86_64 0:17.0.1.1-1          unixODBC-
devel.x86_64 0:2.3.1-11.e17
```

Dependency Installed:

```
msodbcsql17.x86_64 0:17.0.1.1-1
unixODBC.x86_64 0:2.3.1-11.e17
```

Complete!

SOURCE YOUR ENVIRONMENT

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

CONNECT TO THE LOCALHOST USING SQLCMD

```
sqlcmd -S localhost -U SA -P 'Oracle123'
1> select @@VERSION
2> go
```

```
-----
-----
-----
-----
Microsoft SQL Server 2017 (RTM-CU4) (KB4056498) - 14.0.3022.28 (X64)
Feb  9 2018 19:39:09
Copyright (C) 2017 Microsoft Corporation
Developer Edition (64-bit) on Linux (Red Hat Enterprise Linux Server 7.4
(Maipo))
```

(1 rows affected)

LISTING OF MSSQL BINARIES:

```
sql100:/opt/mssql/bin
> ls -ltr
total 23548
```




```
-rwxrwxr-x. 1 root root 1294 Feb 16 16:20 mssql-conf
-rwxr-xr-x. 1 root root 934136 Feb 16 16:20 sqlservr
-rwxr-xr-x. 1 root root 23140824 Feb 16 16:20 paldumper
-rwxr-xr-x. 1 root root 1886 Feb 16 16:20 handle-crash.sh
-rwxr-xr-x. 1 root root 1615 Feb 16 16:20 generate-sql-dump.sh
-rwxr-xr-x. 1 root root 16302 Feb 16 16:20 crash-support-functions.sh
-rwxr-xr-x. 1 root root 409 Feb 16 16:20 compress-dump.sh
sql100:/opt/mssql/bin
```

```
sql100:/opt/mssql/bin
```

```
> file sqlservr
```

```
sqlservr: ELF 64-bit LSB shared object, x86-64, version 1 (SYSV), dynamically linked (uses shared libs), for GNU/Linux 2.6.32, BuildID[sha1]=2e700676cb898bd5ce16eb3833a8bc7254e38054, stripped
```

```
sql100:/opt/mssql/bin
```

```
> file generate-sql-dump.sh
```

```
generate-sql-dump.sh: Bourne-Again shell script, ASCII text executable
```

```
sql100:/opt/mssql/bin
```

```
> strings sqlservr |head
```

```
/lib64/ld-linux-x86-64.so.2
```

```
libpthread.so.0
```

```
_ITM_deregisterTMCloneTable
```

```
_Jv_RegisterClasses
```

```
_ITM_registerTMCloneTable
```

```
sem_close
```

```
pthread_cond_init
```

```
pthread_rwlock_trywrlock
```

```
pthread_yield
```

```
pthread_self
```

```
sql100:/opt/mssql/bin
```

```
> strings sqlservr |more
```

```
/lib64/ld-linux-x86-64.so.2
```

```
libpthread.so.0
```

```
_ITM_deregisterTMCloneTable
```

```
_Jv_RegisterClasses
```

```
_ITM_registerTMCloneTable
```

```
sem_close
```

```
pthread_cond_init
```

```
pthread_rwlock_trywrlock
```

```
pthread_yield
```



```
pthread_self
pthread_rwlock_wrlock
__libc_current_sigrtmin
pthread_sigmask
pthread_exit
sem_timedwait
pthread_rwlock_unlock
fsync
__errno_location
sem_post
pthread_mutex_lock
pthread_setspecific
pwrite
pread
accept
pthread_getattr_np
sem_destroy
fcntl
pthread_rwlock_init
pthread_create
pthread_join
sem_open
sigaction
```

LOOK FOR MSSQL USER AND GROUP

```
sql100:/opt/mssql/bin
> cat /etc/passwd |grep mssql
mssql:x:991:986::/var/opt/mssql:/bin/bash
sql100:/opt/mssql/bin
> cat /etc/group |grep mssql
mssql:x:986:
```

LOOK FOR RUNNING PROCESSES

```
sql100:/opt/mssql/bin
> ps -ef |grep -i mssql |grep -v grep
mssql  1206  1 0 15:35 ?    00:00:10 /opt/mssql/bin/sqlservr
```



```
mssql 1687 1206 1 15:35 ? 00:02:41 /opt/mssql/bin/sqlservr
```

```
sql100:/opt/mssql/bin
```

```
> ps -fu mssql
```

```
UID      PID  PPID  C  STIME TTY      TIME CMD
mssql  1206    1  0 15:35 ?        00:00:10 /opt/mssql/bin/sqlservr
mssql  1687  1206  1 15:35 ?        00:02:43 /opt/mssql/bin/sqlservr
```

