Install & Configure MariaDB Galera Cluster on OEL7.9

# Configure /etc/hosts on All Nodes (IaaS on Oracle Cloud Infrastructure)

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| 10.77.0.195 mariagalera01.sub02051503110.vcnesd2.oraclevcn.com mariagalera01  10.77.0.143 mariagalera02.sub02051503110.vcnesd2.oraclevcn.com mariagalera02  10.77.0.67 mariagalera03.sub02051503110.vcnesd2.oraclevcn.com mariagalera03 |

# Configure Repository for MariaDB on All Nodes

Link: <https://mariadb.org/download/?t=repo-config&d=CentOS+7+%28x86_64%29&v=10.7&r_m=nus>

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| [root@mariagalera01 ~]# vi /etc/yum.repos.d/MariaDB.repo; cat /etc/yum.repos.d/MariaDB.repo;  # MariaDB 10.7 CentOS repository list - created 2022-06-01 14:10 UTC  # https://mariadb.org/download/  [mariadb]  name = MariaDB  baseurl = https://download.nus.edu.sg/mirror/mariadb/yum/10.7/centos7-amd64  gpgkey=https://download.nus.edu.sg/mirror/mariadb/yum/RPM-GPG-KEY-MariaDB  gpgcheck=1  [root@mariagalera01 ~]# yum clean all  Loaded plugins: langpacks, ulninfo  Cleaning repos: mariadb ol7\_MySQL80 ol7\_MySQL80\_connectors\_community ol7\_MySQL80\_tools\_community ol7\_UEKR6  : ol7\_addons ol7\_ksplice ol7\_latest ol7\_oci\_included ol7\_optional\_latest ol7\_software\_collections  [root@mariagalera01 ~]# |

# Install MariaDB on All Nodes

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| [root@mariagalera01 ~]# yum install -y mariadb-server mariadb-client mariadb-common galera rsync lsof  Loaded plugins: langpacks, ulninfo  Package mariadb-server is obsoleted by MariaDB-server, trying to install MariaDB-server-10.7.4-1.el7.centos.x86\_64 instead  No package mariadb-client available.  \* Maybe you meant: MariaDB-client  No package mariadb-common available.  \* Maybe you meant: MariaDB-common  No package galera available.  Package rsync-3.1.2-10.el7.x86\_64 already installed and latest version  Package lsof-4.87-6.el7.x86\_64 already installed and latest version  Resolving Dependencies  --> Running transaction check  ---> Package MariaDB-server.x86\_64 0:10.7.4-1.el7.centos will be installed  --> Processing Dependency: MariaDB-common >= 10.6.1 for package: MariaDB-server-10.7.4-1.el7.centos.x86\_64  --> Processing Dependency: MariaDB-client >= 10.6.1 for package: MariaDB-server-10.7.4-1.el7.centos.x86\_64  --> Processing Dependency: libpmem.so.1(LIBPMEM\_1.0)(64bit) for package: MariaDB-server-10.7.4-1.el7.centos.x86\_64  --> Processing Dependency: galera-4 for package: MariaDB-server-10.7.4-1.el7.centos.x86\_64  --> Processing Dependency: libpmem.so.1()(64bit) for package: MariaDB-server-10.7.4-1.el7.centos.x86\_64  --> Processing Dependency: libpcre2-8.so.0()(64bit) for package: MariaDB-server-10.7.4-1.el7.centos.x86\_64  --> Running transaction check  ---> Package MariaDB-client.x86\_64 0:10.7.4-1.el7.centos will be installed  --> Processing Dependency: perl(DBI) for package: MariaDB-client-10.7.4-1.el7.centos.x86\_64  --> Processing Dependency: perl(Data::Dumper) for package: MariaDB-client-10.7.4-1.el7.centos.x86\_64  ---> Package MariaDB-common.x86\_64 0:10.7.4-1.el7.centos will be installed  --> Processing Dependency: MariaDB-compat for package: MariaDB-common-10.7.4-1.el7.centos.x86\_64  ---> Package galera-4.x86\_64 0:26.4.11-1.el7.centos will be installed  --> Processing Dependency: socat for package: galera-4-26.4.11-1.el7.centos.x86\_64  --> Processing Dependency: libboost\_program\_options-mt.so.1.53.0()(64bit) for package: galera-4-26.4.11-1.el7.centos.x86\_64  ---> Package libpmem.x86\_64 0:1.5.1-2.1.0.1.el7 will be installed  ---> Package pcre2.x86\_64 0:10.23-2.el7 will be installed  --> Running transaction check  ---> Package MariaDB-compat.x86\_64 0:10.7.4-1.el7.centos will be installed  ---> Package boost-program-options.x86\_64 0:1.53.0-28.el7 will be installed  ---> Package perl-DBI.x86\_64 0:1.627-4.el7 will be installed  --> Processing Dependency: perl(RPC::PlClient) >= 0.2000 for package: perl-DBI-1.627-4.el7.x86\_64  --> Processing Dependency: perl(RPC::PlServer) >= 0.2001 for package: perl-DBI-1.627-4.el7.x86\_64  ---> Package perl-Data-Dumper.x86\_64 0:2.145-3.el7 will be installed  ---> Package socat.x86\_64 0:1.7.3.2-2.el7 will be installed  --> Running transaction check  ---> Package perl-PlRPC.noarch 0:0.2020-14.el7 will be installed  --> Processing Dependency: perl(Net::Daemon) >= 0.13 for package: perl-PlRPC-0.2020-14.el7.noarch  --> Processing Dependency: perl(Compress::Zlib) for package: perl-PlRPC-0.2020-14.el7.noarch  --> Processing Dependency: perl(Net::Daemon::Log) for package: perl-PlRPC-0.2020-14.el7.noarch  --> Processing Dependency: perl(Net::Daemon::Test) for package: perl-PlRPC-0.2020-14.el7.noarch  --> Running transaction check  ---> Package perl-IO-Compress.noarch 0:2.061-2.el7 will be installed  --> Processing Dependency: perl(Compress::Raw::Bzip2) >= 2.061 for package: perl-IO-Compress-2.061-2.el7.noarch  --> Processing Dependency: perl(Compress::Raw::Zlib) >= 2.061 for package: perl-IO-Compress-2.061-2.el7.noarch  ---> Package perl-Net-Daemon.noarch 0:0.48-5.el7 will be installed  --> Running transaction check  ---> Package perl-Compress-Raw-Bzip2.x86\_64 0:2.061-3.el7 will be installed  ---> Package perl-Compress-Raw-Zlib.x86\_64 1:2.061-4.el7 will be installed  --> Finished Dependency Resolution  Dependencies Resolved  =================================================================================================================  Package Arch Version Repository Size  =================================================================================================================  Installing:  MariaDB-server x86\_64 10.7.4-1.el7.centos mariadb 25 M  Installing for dependencies:  MariaDB-client x86\_64 10.7.4-1.el7.centos mariadb 15 M  MariaDB-common x86\_64 10.7.4-1.el7.centos mariadb 81 k  MariaDB-compat x86\_64 10.7.4-1.el7.centos mariadb 2.2 M  boost-program-options x86\_64 1.53.0-28.el7 ol7\_latest 156 k  galera-4 x86\_64 26.4.11-1.el7.centos mariadb 9.9 M  libpmem x86\_64 1.5.1-2.1.0.1.el7 ol7\_latest 58 k  pcre2 x86\_64 10.23-2.el7 ol7\_latest 201 k  perl-Compress-Raw-Bzip2 x86\_64 2.061-3.el7 ol7\_latest 32 k  perl-Compress-Raw-Zlib x86\_64 1:2.061-4.el7 ol7\_latest 57 k  perl-DBI x86\_64 1.627-4.el7 ol7\_latest 801 k  perl-Data-Dumper x86\_64 2.145-3.el7 ol7\_latest 47 k  perl-IO-Compress noarch 2.061-2.el7 ol7\_latest 259 k  perl-Net-Daemon noarch 0.48-5.el7 ol7\_latest 50 k  perl-PlRPC noarch 0.2020-14.el7 ol7\_latest 35 k  socat x86\_64 1.7.3.2-2.el7 ol7\_latest 289 k  Transaction Summary  =================================================================================================================  Install 1 Package (+15 Dependent packages)  Total download size: 54 M  Installed size: 228 M  Downloading packages:  warning: /var/cache/yum/x86\_64/7Server/mariadb/packages/MariaDB-common-10.7.4-1.el7.centos.x86\_64.rpm: Header V4 DSA/SHA1 Signature, key ID 1bb943db: NOKEY  Public key for MariaDB-common-10.7.4-1.el7.centos.x86\_64.rpm is not installed  (1/16): MariaDB-common-10.7.4-1.el7.centos.x86\_64.rpm | 81 kB 00:00:00  (2/16): MariaDB-compat-10.7.4-1.el7.centos.x86\_64.rpm | 2.2 MB 00:00:00  (3/16): boost-program-options-1.53.0-28.el7.x86\_64.rpm | 156 kB 00:00:00  (4/16): MariaDB-client-10.7.4-1.el7.centos.x86\_64.rpm | 15 MB 00:00:01  (5/16): libpmem-1.5.1-2.1.0.1.el7.x86\_64.rpm | 58 kB 00:00:00  (6/16): perl-Compress-Raw-Bzip2-2.061-3.el7.x86\_64.rpm | 32 kB 00:00:00  (7/16): pcre2-10.23-2.el7.x86\_64.rpm | 201 kB 00:00:00  (8/16): perl-Compress-Raw-Zlib-2.061-4.el7.x86\_64.rpm | 57 kB 00:00:00  (9/16): perl-DBI-1.627-4.el7.x86\_64.rpm | 801 kB 00:00:00  (10/16): perl-IO-Compress-2.061-2.el7.noarch.rpm | 259 kB 00:00:00  (11/16): perl-Net-Daemon-0.48-5.el7.noarch.rpm | 50 kB 00:00:00  (12/16): perl-Data-Dumper-2.145-3.el7.x86\_64.rpm | 47 kB 00:00:00  (13/16): socat-1.7.3.2-2.el7.x86\_64.rpm | 289 kB 00:00:00  (14/16): perl-PlRPC-0.2020-14.el7.noarch.rpm | 35 kB 00:00:00  (15/16): MariaDB-server-10.7.4-1.el7.centos.x86\_64.rpm | 25 MB 00:00:11  (16/16): galera-4-26.4.11-1.el7.centos.x86\_64.rpm | 9.9 MB 00:00:11  -----------------------------------------------------------------------------------------------------------------  Total 4.0 MB/s | 54 MB 00:00:13  Retrieving key from https://download.nus.edu.sg/mirror/mariadb/yum/RPM-GPG-KEY-MariaDB  Importing GPG key 0x1BB943DB:  Userid : "MariaDB Package Signing Key <package-signing-key@mariadb.org>"  Fingerprint: 1993 69e5 404b d5fc 7d2f e43b cbcb 082a 1bb9 43db  From : https://download.nus.edu.sg/mirror/mariadb/yum/RPM-GPG-KEY-MariaDB  Running transaction check  Running transaction test  Transaction test succeeded  Running transaction  Installing : MariaDB-compat-10.7.4-1.el7.centos.x86\_64 1/16  Installing : MariaDB-common-10.7.4-1.el7.centos.x86\_64 2/16  Installing : libpmem-1.5.1-2.1.0.1.el7.x86\_64 3/16  Installing : perl-Data-Dumper-2.145-3.el7.x86\_64 4/16  Installing : pcre2-10.23-2.el7.x86\_64 5/16  Installing : socat-1.7.3.2-2.el7.x86\_64 6/16  Installing : perl-Net-Daemon-0.48-5.el7.noarch 7/16  Installing : 1:perl-Compress-Raw-Zlib-2.061-4.el7.x86\_64 8/16  Installing : boost-program-options-1.53.0-28.el7.x86\_64 9/16  Installing : galera-4-26.4.11-1.el7.centos.x86\_64 10/16  Installing : perl-Compress-Raw-Bzip2-2.061-3.el7.x86\_64 11/16  Installing : perl-IO-Compress-2.061-2.el7.noarch 12/16  Installing : perl-PlRPC-0.2020-14.el7.noarch 13/16  Installing : perl-DBI-1.627-4.el7.x86\_64 14/16  Installing : MariaDB-client-10.7.4-1.el7.centos.x86\_64 15/16  Installing : MariaDB-server-10.7.4-1.el7.centos.x86\_64 16/16  Two all-privilege accounts were created.  One is root@localhost, it has no password, but you need to  be system 'root' user to connect. Use, for example, sudo mysql  The second is mysql@localhost, it has no password either, but  you need to be the system 'mysql' user to connect.  After connecting you can set the password, if you would need to be  able to connect as any of these users with a password and without sudo  See the MariaDB Knowledgebase at https://mariadb.com/kb  Please report any problems at https://mariadb.org/jira  The latest information about MariaDB is available at https://mariadb.org/.  Consider joining MariaDB's strong and vibrant community:  https://mariadb.org/get-involved/  Verifying : pcre2-10.23-2.el7.x86\_64 1/16  Verifying : perl-Compress-Raw-Bzip2-2.061-3.el7.x86\_64 2/16  Verifying : MariaDB-server-10.7.4-1.el7.centos.x86\_64 3/16  Verifying : MariaDB-common-10.7.4-1.el7.centos.x86\_64 4/16  Verifying : galera-4-26.4.11-1.el7.centos.x86\_64 5/16  Verifying : boost-program-options-1.53.0-28.el7.x86\_64 6/16  Verifying : perl-IO-Compress-2.061-2.el7.noarch 7/16  Verifying : perl-Data-Dumper-2.145-3.el7.x86\_64 8/16  Verifying : 1:perl-Compress-Raw-Zlib-2.061-4.el7.x86\_64 9/16  Verifying : libpmem-1.5.1-2.1.0.1.el7.x86\_64 10/16  Verifying : MariaDB-client-10.7.4-1.el7.centos.x86\_64 11/16  Verifying : perl-Net-Daemon-0.48-5.el7.noarch 12/16  Verifying : perl-DBI-1.627-4.el7.x86\_64 13/16  Verifying : socat-1.7.3.2-2.el7.x86\_64 14/16  Verifying : perl-PlRPC-0.2020-14.el7.noarch 15/16  Verifying : MariaDB-compat-10.7.4-1.el7.centos.x86\_64 16/16  Installed:  MariaDB-server.x86\_64 0:10.7.4-1.el7.centos  Dependency Installed:  MariaDB-client.x86\_64 0:10.7.4-1.el7.centos MariaDB-common.x86\_64 0:10.7.4-1.el7.centos  MariaDB-compat.x86\_64 0:10.7.4-1.el7.centos boost-program-options.x86\_64 0:1.53.0-28.el7  galera-4.x86\_64 0:26.4.11-1.el7.centos libpmem.x86\_64 0:1.5.1-2.1.0.1.el7  pcre2.x86\_64 0:10.23-2.el7 perl-Compress-Raw-Bzip2.x86\_64 0:2.061-3.el7  perl-Compress-Raw-Zlib.x86\_64 1:2.061-4.el7 perl-DBI.x86\_64 0:1.627-4.el7  perl-Data-Dumper.x86\_64 0:2.145-3.el7 perl-IO-Compress.noarch 0:2.061-2.el7  perl-Net-Daemon.noarch 0:0.48-5.el7 perl-PlRPC.noarch 0:0.2020-14.el7  socat.x86\_64 0:1.7.3.2-2.el7  Complete!  [root@mariagalera01 ~]# |

# Configure MariaDB & Galera on All Nodes

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| --- |
| [root@mariagalera01 ~]# vi /etc/my.cnf.d/server.cnf  [root@mariagalera01 ~]# cat /etc/my.cnf.d/server.cnf  #  # These groups are read by MariaDB server.  # Use it for options that only the server (but not clients) should see  #  # See the examples of server my.cnf files in /usr/share/mysql/  #  # this is read by the standalone daemon and embedded servers  [server]  # this is only for the mysqld standalone daemon  [mysqld]  log\_error=/var/log/mariadb.log  #  # \* Galera-related settings  #  [galera]  # Mandatory settings  wsrep\_on=ON  wsrep\_provider=/usr/lib64/galera-4/libgalera\_smm.so  wsrep\_cluster\_address=gcomm://10.77.0.195,10.77.0.143,10.77.0.67  binlog\_format=row  default\_storage\_engine=InnoDB  innodb\_autoinc\_lock\_mode=2  ## Galera Cluster Configuration  wsrep\_cluster\_name="galeracluster1"  ## Galera Synchronization Configuration  wsrep\_sst\_method=rsync  ## Galera Node Configuration  wsrep\_node\_address="10.77.0.195"  wsrep\_node\_name="mariagalera01"  #  # Allow server to accept connections on all interfaces.  #  bind-address=0.0.0.0  #  # Optional setting  #wsrep\_slave\_threads=1  #innodb\_flush\_log\_at\_trx\_commit=0  # this is only for embedded server  [embedded]  # This group is only read by MariaDB servers, not by MySQL.  # If you use the same .cnf file for MySQL and MariaDB,  # you can put MariaDB-only options here  [mariadb]  # This group is only read by MariaDB-10.7 servers.  # If you use the same .cnf file for MariaDB of different versions,  # use this group for options that older servers don't understand  [mariadb-10.7]  [root@mariagalera01 ~]# touch /var/log/mariadb.log  [root@mariagalera01 ~]# id mysql  uid=27(mysql) gid=27(mysql) groups=27(mysql)  [root@mariagalera01 ~]# chown mysql:mysql /var/log/mariadb.log  [root@mariagalera01 ~]#  [root@mariagalera02 ~]# vi /etc/my.cnf.d/server.cnf; cat /etc/my.cnf.d/server.cnf;  #  # These groups are read by MariaDB server.  # Use it for options that only the server (but not clients) should see  #  # See the examples of server my.cnf files in /usr/share/mysql/  #  # this is read by the standalone daemon and embedded servers  [server]  # this is only for the mysqld standalone daemon  [mysqld]  log\_error=/var/log/mariadb.log  #  # \* Galera-related settings  #  [galera]  # Mandatory settings  wsrep\_on=ON  wsrep\_provider=/usr/lib64/galera-4/libgalera\_smm.so  wsrep\_cluster\_address=gcomm://10.77.0.195,10.77.0.143,10.77.0.67  binlog\_format=row  default\_storage\_engine=InnoDB  innodb\_autoinc\_lock\_mode=2  ## Galera Cluster Configuration  wsrep\_cluster\_name="galeracluster1"  ## Galera Synchronization Configuration  wsrep\_sst\_method=rsync  ## Galera Node Configuration  wsrep\_node\_address="10.77.0.143"  wsrep\_node\_name="mariagalera02"  #  # Allow server to accept connections on all interfaces.  #  bind-address=0.0.0.0  #  # Optional setting  #wsrep\_slave\_threads=1  #innodb\_flush\_log\_at\_trx\_commit=0  # this is only for embedded server  [embedded]  # This group is only read by MariaDB servers, not by MySQL.  # If you use the same .cnf file for MySQL and MariaDB,  # you can put MariaDB-only options here  [mariadb]  # This group is only read by MariaDB-10.7 servers.  # If you use the same .cnf file for MariaDB of different versions,  # use this group for options that older servers don't understand  [mariadb-10.7]  [root@mariagalera02 ~]# touch /var/log/mariadb.log  [root@mariagalera02 ~]# chown mysql:mysql /var/log/mariadb.log  [root@mariagalera02 ~]#  [root@mariagalera03 ~]# vi /etc/my.cnf.d/server.cnf; cat /etc/my.cnf.d/server.cnf;  #  # These groups are read by MariaDB server.  # Use it for options that only the server (but not clients) should see  #  # See the examples of server my.cnf files in /usr/share/mysql/  #  # this is read by the standalone daemon and embedded servers  [server]  # this is only for the mysqld standalone daemon  [mysqld]  log\_error=/var/log/mariadb.log  #  # \* Galera-related settings  #  [galera]  # Mandatory settings  wsrep\_on=ON  wsrep\_provider=/usr/lib64/galera-4/libgalera\_smm.so  wsrep\_cluster\_address=gcomm://10.77.0.195,10.77.0.143,10.77.0.67  binlog\_format=row  default\_storage\_engine=InnoDB  innodb\_autoinc\_lock\_mode=2  ## Galera Cluster Configuration  wsrep\_cluster\_name="galeracluster1"  ## Galera Synchronization Configuration  wsrep\_sst\_method=rsync  ## Galera Node Configuration  wsrep\_node\_address="10.77.0.67"  wsrep\_node\_name="mariagalera03"  #  # Allow server to accept connections on all interfaces.  #  bind-address=0.0.0.0  #  # Optional setting  #wsrep\_slave\_threads=1  #innodb\_flush\_log\_at\_trx\_commit=0  # this is only for embedded server  [embedded]  # This group is only read by MariaDB servers, not by MySQL.  # If you use the same .cnf file for MySQL and MariaDB,  # you can put MariaDB-only options here  [mariadb]  # This group is only read by MariaDB-10.7 servers.  # If you use the same .cnf file for MariaDB of different versions,  # use this group for options that older servers don't understand  [mariadb-10.7]  [root@mariagalera03 ~]# touch /var/log/mariadb.log  [root@mariagalera03 ~]# chown mysql:mysql /var/log/mariadb.log  [root@mariagalera03 ~]# |

# Create Cluster on First Node Only

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| --- |
| [root@mariagalera01 ~]# galera\_new\_cluster  [root@mariagalera01 ~]# |

# Stop Firewall on All Nodes

|  |
| --- |
| [root@mariagalera01 ~]# systemctl stop firewalld  [root@mariagalera01 ~]# systemctl disable firewalld  Removed symlink /etc/systemd/system/multi-user.target.wants/firewalld.service.  Removed symlink /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service.  [root@mariagalera01 ~]# |

# Secure MariaDB Installation on All Nodes

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| [root@mariagalera01 ~]# mariadb-secure-installation  NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB  SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!  In order to log into MariaDB to secure it, we'll need the current  password for the root user. If you've just installed MariaDB, and  haven't set the root password yet, you should just press enter here.  Enter current password for root (enter for none):  OK, successfully used password, moving on...  Setting the root password or using the unix\_socket ensures that nobody  can log into the MariaDB root user without the proper authorisation.  You already have your root account protected, so you can safely answer 'n'.  Switch to unix\_socket authentication [Y/n] Y  Enabled successfully!  Reloading privilege tables..  ... Success!  You already have your root account protected, so you can safely answer 'n'.  Change the root password? [Y/n] Y  New password: **oracle789**  Re-enter new password: **oracle789**  Password updated successfully!  Reloading privilege tables..  ... Success!  By default, a MariaDB installation has an anonymous user, allowing anyone  to log into MariaDB without having to have a user account created for  them. This is intended only for testing, and to make the installation  go a bit smoother. You should remove them before moving into a  production environment.  Remove anonymous users? [Y/n] Y  ... Success!  Normally, root should only be allowed to connect from 'localhost'. This  ensures that someone cannot guess at the root password from the network.  Disallow root login remotely? [Y/n] Y  ... Success!  By default, MariaDB comes with a database named 'test' that anyone can  access. This is also intended only for testing, and should be removed  before moving into a production environment.  Remove test database and access to it? [Y/n] Y  - Dropping test database...  ... Success!  - Removing privileges on test database...  ... Success!  Reloading the privilege tables will ensure that all changes made so far  will take effect immediately.  Reload privilege tables now? [Y/n] Y  ... Success!  Cleaning up...  All done! If you've completed all of the above steps, your MariaDB  installation should now be secure.  Thanks for using MariaDB!  [root@mariagalera01 ~]# |

# Startup First Node

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| --- |
| [root@mariagalera01 ~]# mysql -u root -p -e "SHOW STATUS LIKE 'wsrep\_cluster\_size'"  Enter password:  +--------------------+-------+  | Variable\_name | Value |  +--------------------+-------+  | wsrep\_cluster\_size | 1 |  +--------------------+-------+  [root@mariagalera01 ~]# |

# Startup Second Node

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| [root@mariagalera02 ~]# systemctl start mariadb  [root@mariagalera02 ~]# systemctl status mariadb  ● mariadb.service - MariaDB 10.7.4 database server  Loaded: loaded (/usr/lib/systemd/system/mariadb.service; disabled; vendor preset: disabled)  Drop-In: /etc/systemd/system/mariadb.service.d  └─migrated-from-my.cnf-settings.conf  Active: active (running) since Wed 2022-06-01 15:02:59 GMT; 7s ago  Docs: man:mariadbd(8)  https://mariadb.com/kb/en/library/systemd/  Process: 6102 ExecStartPost=/bin/sh -c systemctl unset-environment \_WSREP\_START\_POSITION (code=exited, status=0/SUCCESS)  Process: 5832 ExecStartPre=/bin/sh -c [ ! -e /usr/bin/galera\_recovery ] && VAR= || VAR=`cd /usr/bin/..; /usr/bin/galera\_recovery`; [ $? -eq 0 ] && systemctl set-environment \_WSREP\_START\_POSITION=$VAR || exit 1 (code=exited, status=0/SUCCESS)  Process: 5830 ExecStartPre=/bin/sh -c systemctl unset-environment \_WSREP\_START\_POSITION (code=exited, status=0/SUCCESS)  Main PID: 5896 (mariadbd)  Status: "Taking your SQL requests now..."  Memory: 184.3M  CGroup: /system.slice/mariadb.service  └─5896 /usr/sbin/mariadbd --wsrep\_start\_position=00000000-0000-0000-0000-000000000000:-1  Jun 01 15:02:57 mariagalera02 rsyncd[6058]: receiving file list  Jun 01 15:02:57 mariagalera02 rsyncd[6059]: receiving file list  Jun 01 15:02:57 mariagalera02 rsyncd[6059]: sent 48 bytes received 270 bytes total size 67  Jun 01 15:02:57 mariagalera02 rsyncd[6062]: connect from mariagalera01.sub02051503110.vcnesd2.oraclevcn.com (10.77.0.195)  Jun 01 15:02:57 mariagalera02 rsyncd[6062]: rsync to rsync\_sst/./sys from mariagalera01.sub02051503110.vcnesd2.oraclevcn.com (10.77.0.195)  Jun 01 15:02:57 mariagalera02 rsyncd[6062]: receiving file list  Jun 01 15:02:57 mariagalera02 rsyncd[6065]: connect from mariagalera01.sub02051503110.vcnesd2.oraclevcn.com (10.77.0.195)  Jun 01 15:02:57 mariagalera02 rsyncd[6065]: rsync to rsync\_sst/ from mariagalera01.sub02051503110.vcnesd2.oraclevcn.com (10.77.0.195)  Jun 01 15:02:57 mariagalera02 rsyncd[6065]: receiving file list  Jun 01 15:02:59 mariagalera02 systemd[1]: Started MariaDB 10.7.4 database server.  [root@mariagalera02 ~]# mysql -u root -p -e "SHOW STATUS LIKE 'wsrep\_cluster\_size'"  Enter password:  +--------------------+-------+  | Variable\_name | Value |  +--------------------+-------+  | wsrep\_cluster\_size | 2 |  +--------------------+-------+  [root@mariagalera02 ~]# |

# Startup Third Node

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| [root@mariagalera03 ~]# systemctl start mariadb  [root@mariagalera03 ~]# systemctl status mariadb  ● mariadb.service - MariaDB 10.7.4 database server  Loaded: loaded (/usr/lib/systemd/system/mariadb.service; disabled; vendor preset: disabled)  Drop-In: /etc/systemd/system/mariadb.service.d  └─migrated-from-my.cnf-settings.conf  Active: active (running) since Wed 2022-06-01 15:05:37 GMT; 5s ago  Docs: man:mariadbd(8)  https://mariadb.com/kb/en/library/systemd/  Process: 6256 ExecStartPost=/bin/sh -c systemctl unset-environment \_WSREP\_START\_POSITION (code=exited, status=0/SUCCESS)  Process: 5983 ExecStartPre=/bin/sh -c [ ! -e /usr/bin/galera\_recovery ] && VAR= || VAR=`cd /usr/bin/..; /usr/bin/galera\_recovery`; [ $? -eq 0 ] && systemctl set-environment \_WSREP\_START\_POSITION=$VAR || exit 1 (code=exited, status=0/SUCCESS)  Process: 5981 ExecStartPre=/bin/sh -c systemctl unset-environment \_WSREP\_START\_POSITION (code=exited, status=0/SUCCESS)  Main PID: 6049 (mariadbd)  Status: "Taking your SQL requests now..."  Memory: 190.3M  CGroup: /system.slice/mariadb.service  └─6049 /usr/sbin/mariadbd --wsrep\_start\_position=00000000-0000-0000-0000-000000000000:-1  Jun 01 15:05:35 mariagalera03 rsyncd[6212]: rsync to rsync\_sst/./mysql from mariagalera01.sub02051503110.vcnesd2.oraclevcn.com (10.77.0.195)  Jun 01 15:05:35 mariagalera03 rsyncd[6213]: receiving file list  Jun 01 15:05:35 mariagalera03 rsyncd[6212]: receiving file list  Jun 01 15:05:35 mariagalera03 rsyncd[6216]: connect from mariagalera01.sub02051503110.vcnesd2.oraclevcn.com (10.77.0.195)  Jun 01 15:05:35 mariagalera03 rsyncd[6216]: rsync to rsync\_sst/./sys from mariagalera01.sub02051503110.vcnesd2.oraclevcn.com (10.77.0.195)  Jun 01 15:05:35 mariagalera03 rsyncd[6216]: receiving file list  Jun 01 15:05:35 mariagalera03 rsyncd[6218]: connect from mariagalera01.sub02051503110.vcnesd2.oraclevcn.com (10.77.0.195)  Jun 01 15:05:35 mariagalera03 rsyncd[6218]: rsync to rsync\_sst/ from mariagalera01.sub02051503110.vcnesd2.oraclevcn.com (10.77.0.195)  Jun 01 15:05:35 mariagalera03 rsyncd[6218]: receiving file list  Jun 01 15:05:37 mariagalera03 systemd[1]: Started MariaDB 10.7.4 database server.  [root@mariagalera03 ~]# mysql -u root -p -e "SHOW STATUS LIKE 'wsrep\_cluster\_size'"  Enter password:  +--------------------+-------+  | Variable\_name | Value |  +--------------------+-------+  | wsrep\_cluster\_size | 3 |  +--------------------+-------+  [root@mariagalera03 ~]# |

# Replication Test

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| [opc@mariagalera01 ~]$ mysql -u root -p  Enter password:  Welcome to the MariaDB monitor. Commands end with ; or \g.  Your MariaDB connection id is 8  Server version: 10.7.4-MariaDB MariaDB Server  Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  MariaDB [(none)]> select \* from musics.equipment;  +----+--------------------------+-------+-------+  | id | type | quant | color |  +----+--------------------------+-------+-------+  | 2 | slide | 2 | blue |  | 6 | PRS Guitar | 13 | Brown |  | 8 | Yamaha Piano | 3 | Black |  | 9 | Meinl Hihat | 8 | Gold |  | 12 | Fender Telecaster Guitar | 4 | Brown |  | 14 | Musicman Bass | 4 | Black |  +----+--------------------------+-------+-------+  6 rows in set (0.001 sec)  MariaDB [(none)]> exit  Bye  [opc@mariagalera01 ~]$  MariaDB [musics]> select \* from equipment;  +----+--------------+-------+-------+  | id | type | quant | color |  +----+--------------+-------+-------+  | 2 | slide | 2 | blue |  | 6 | PRS Guitar | 13 | Brown |  | 8 | Yamaha Piano | 3 | Black |  | 9 | Meinl Hihat | 8 | Gold |  +----+--------------+-------+-------+  4 rows in set (0.000 sec)  MariaDB [musics]> select \* from equipment;  +----+--------------------------+-------+-------+  | id | type | quant | color |  +----+--------------------------+-------+-------+  | 2 | slide | 2 | blue |  | 6 | PRS Guitar | 13 | Brown |  | 8 | Yamaha Piano | 3 | Black |  | 9 | Meinl Hihat | 8 | Gold |  | 12 | Fender Telecaster Guitar | 4 | Brown |  | 14 | Musicman Bass | 4 | Black |  +----+--------------------------+-------+-------+  6 rows in set (0.000 sec)  MariaDB [musics]> exit  Bye  [opc@mariagalera02 ~]$ |