

# ClusterControl

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# MariaDB Galera Cluster @OracleLinux9.5 using ClusterControl install-cc script with limited Internet connection (via repository proxy aka satellite server).

Download Oracle Linux distro and connect it to Repository Server, as described here.:

- (2025-02-12 -- ClusterControl is only compatible with x86\_64 systems)

Install OS in minimal mode, !without GUI.

<https://yum.oracle.com/oracle-linux-isos.html>

For example, OracleLinux-R9-U5-x86\_64-dvd.iso

HLD (High-Level Design)

(one VM is connected to Internet)

lt58ncp1sat1 - Repository satellite

(others are NOT connected to Internet):

lt58ncp1dbm1 - Monitoring, ClusterControl

lt58ncp1dbn1 - Node 1, MariaDB Galera Cluster

lt58ncp1dbn2 - Node 2, MariaDB Galera Cluster

lt58ncp1dbn3 - Node 3, MariaDB Galera Cluster

## Preparations:

- ensure NO cockpit service running, it occupies port 9090, same as Prometheus uses. Or, if required, change its listening port.

```
systemctl status cockpit
systemctl stop cockpit
dnf remove cockpit*
```

## Install utlis

```
dnf install \
    tmux \
    wget
```

## Firewall with firewalld on ClusterControl

```
systemctl enable firewalld
systemctl start firewalld
systemctl status firewalld
firewall-cmd --add-service=http --permanent
firewall-cmd --add-service=https --permanent
firewall-cmd --add-service=prometheus --permanent
firewall-cmd --reload
firewall-cmd --list-all
```

Temporary disable SELinux for installation, it will be enabled later

```
sed -i 's|SELINUX=enforcing|SELINUX=disabled|g' /etc/selinux/config
setenforce 0
getenforce
```

# Configuring repositories

Add repositories to all VMs which point to repository satellite. Configure DNS for the host locally, if needed.

```
ping lt58ncp1sat1
vi /etc/hosts
```

```
192.168.56.109 lt58ncp1sat1
```

```
ping lt58ncp1sat1
curl http://lt58ncp1sat1/hello
rm /etc/yum.repos.d/*
vi /etc/yum.repos.d/lt58ncp1sat1.repo
```

Refer to config file on another page.

Check, update and reboot.

```
dnf repolist
dnf update
shutdown -r now
```

Login

```
tmux
sudo su
```

On the day of writing (2025-02-13), there is a transition period in caused by renamed commands in the scripts (`mysql` and `mariadb`). To resolve it, additional tricks needed to make the script work (and keep installations script integrity).

```
ln -s /usr/bin/mariadb      /usr/bin/mysql
ln -s /usr/sbin/mariabdb    /usr/bin/mysqld
ln -s /usr/bin/mariadb-admin /usr/bin/mysqladmin
ln -s /usr/bin/mariadb-install-db /usr/bin/mysql_install_db
```

# Offline installation

Install and enable MariaDB manually

```
dnf install \
    MariaDB-client \
    MariaDB-common \
    MariaDB-server \
    MariaDB-shared
systemctl enable mariadb
```

```
systemctl start mariadb
systemctl status mariadb
```

Download and transfer installation script to the destination machine.

```
wget http://www.severalnines.com/downloads/cmon/install-cc
chmod +x ./install-cc
# OFFLINE=true HOST=192.168.10.211 ./install-cc
OFFLINE=true ./install-cc
```

Define bind address to config file and restart the service

```
vi /etc/default/cmon
```

add line, replacing with your IP address

```
RPC_BIND_ADDRESSES="127.0.0.1,192.168.10.211"
```

```
systemctl restart cmon*
```

Check that instance is running binded to local address to facilitate activation:

```
ps aux | grep cmon
```

```
root    42467  0.0  0.0 1232048 7812 ?        Ssl  14:43   0:00 /usr/share/cmon-ssh/cmon-ssh
root    42472  0.3  0.4 1295704 51432 ?        Ssl  14:43   0:00 /usr/sbin/cmon-cloud -log_file /var/log/cmon-
cloud.log
root    42475  0.0  0.0 1233492 10152 ?        Ssl  14:43   0:00 /usr/sbin/cmon-events
root    42633  0.4  0.3 567268 36516 ?        Ssl  14:43   0:00 /usr/sbin/cmon --rpc-port=9500 --bind-
addr=127.0.0.1,192.168.10.211 --events-client=http://127.0.0.1:9510 --cloud-service=http://127.0.0.1:9518
root    42687  0.0  0.0   6408  2308 pts/2    S+   14:43   0:00 grep --color=auto cmon
```

Check that firewall is stopped or rules a specified for activation. Enable after activation:

```
firewall-cmd --add-port=9500/tcp
firewall-cmd --add-port=9501/tcp
firewall-cmd --add-port=9510/tcp
firewall-cmd --reload
firewall-cmd --list-all
systemctl stop firewalld
systemctl status firewalld
```

Check from CLI that API is accessible

```
curl http://127.0.0.1:9500/0/settings
```

```
<!DOCTYPE html>
<html lang="en">
  <head>
```

Note down password in KeepAss, as usual.

Send telemetry [N]

MariDB root pass?


MariDB cmon pass?

Open your web browser to <https://192.168.56.107> and create a default Admin User.


Open in the browser

```
firefox https://192.168.56.107
```

Create admin user, note down pass in password manager.



Welcome to



**clustercontrol**

Full-Ops Database Management

## Finish setting up

1 Admin Info


2 Registration Info

\* Username

superadmin


\* Email

superadmin@local.com




\* New password

.....



\* Confirm new password

.....



\* Required

Continue

Choose 'Community', unless license owned.



## Finish setting up

1 Admin Info 2 Registration Info

\* First name

Super

\* Last name

Admin

\* Company name

BestCompany

\* Phone number

+1234567890

\* Plan of interest

Community

☒ I've read and agree to the [Terms and Conditions](#) and the [Privacy Policy](#)

\* Required

Back

Complete

There is a trial license activated



### Trial License Failed

The trial license failed to be activated! You will be using the Community Edition with limited features. Please contact [sales@severalnines.com](mailto:sales@severalnines.com) to request a trial license which will unlock all features to evaluate for a period of time

Continue

Before cluster will be created, nodes need to be prepared. Stop here.

# Node configuration

```
sudo su
```

Perform repositories configuration and update as for cluster node in the beginning.

During cloning the machines, change physical ID and MAC address in the hypervisor (it will not do it automatically in VirtualBox, proxmox). When machines are cloned, 'machine ID' and SSH server's keys need to be re-generated to be seen as different machines:

```
cat /etc/machine-id
systemd-machine-id-setup --commit --print

rm -rf /etc/ssh/ssh_host_*
ssh-keygen -A
ls -la /etc/ssh/ssh_host_*
```

Prepare database storage for cluster management and nodes. To make path identical for all nodes, symbolic link will be created which will be used to configure other applications (MariaDB in this case).

```
export host="$(hostname)"
df -h /mnt/$(hostname)-data/
ln -s /mnt/$(hostname)-data/ /mnt/data
ls -la /mnt/

mkdir -p /mnt/data/mariadb/clusters/ncp/
chown -R mysql:mysql /mnt/data/mariadb/
namei -mo /mnt/data/mariadb/clusters/ncp/
# ? TODO: selinux context
```

Firewall with firewalld on the cluster nodes

```
systemctl enable firewalld
systemctl start firewalld
systemctl status firewalld
firewall-cmd --add-service=mysql --permanent
firewall-cmd --reload
```

Manually install MariaDB server to the node and let ClusterControl configure it. Otherwise, ClusterControl will automatically add repositories to nodes (that we want to avoid and use only specified ones).

```
dnf install \
    MariaDB-server \
    MariaDB-client \
    MariaDB-common \
    MariaDB-backup \
    galera-4

systemctl enable mariadb
systemctl start mariadb
systemctl status mariadb
```

# Deploy new cluster via WebUI

Post-installation is necessary to give permissions to ClusterControl to login into nodes to perform actions (deploy the cluster). Root user as per documentation, but any other user with enough privileges can do.

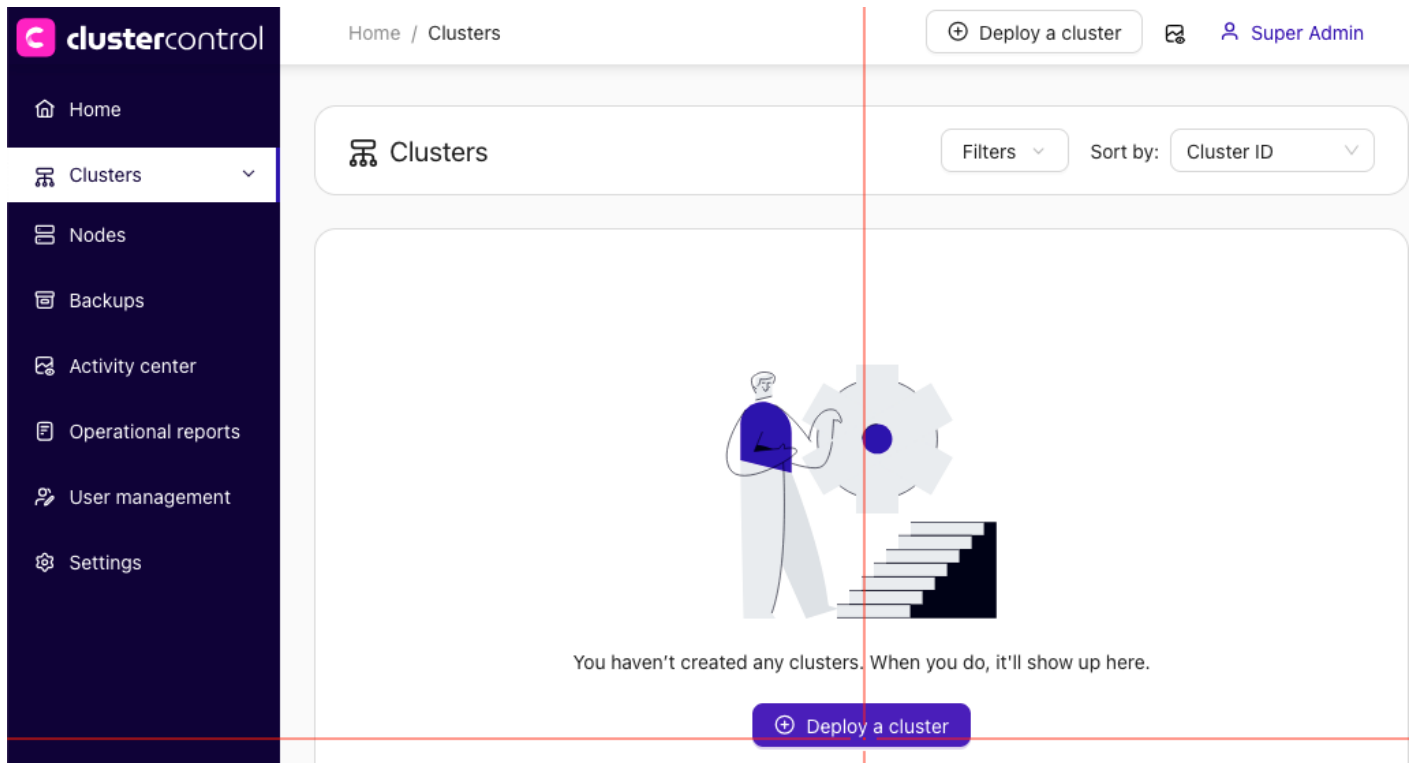
```
sudo su
whoami
cd
ssh-keygen -t ed25519
ssh 0
exit
ls -la .ssh
cat .ssh/known_hosts
```

Copy public key to the nodes and itself (replace hostnames)

```
ssh-copy-id -i ~/.ssh/id_ed25519 root@lt58ncp1dbm1
ssh-copy-id -i ~/.ssh/id_ed25519 root@lt58ncp1dbn1
ssh-copy-id -i ~/.ssh/id_ed25519 root@lt58ncp1dbn2
ssh-copy-id -i ~/.ssh/id_ed25519 root@lt58ncp1dbn3
```

Remember to create symbolic links to new mariadb executables to ensure deployment scripts are working.

Deploy new cluster from ClusterControl dashboard



Confirm pressing [Continue]

## Deploy a cluster

Deploy a cluster managed by ClusterControl's virtual DBA. Monitor failures, automate backups, node and cluster recovery.



### Create a database cluster

Choose a database technology, configure and create an open source database service within a few minutes.

Supported databases: Elasticsearch, Valkey, SQL Server, Redis, Redis Sentinel, MySQL (Primary/Replica), MySQL Galera, PostgreSQL (Primary/Replica), TimescaleDB (Primary/Replica), MongoDB ReplicaSet and MongoDB Shards

Continue

Choose "Database: MySQL Galera, Vendor MariaDB and the version"

## Deploy cluster



\* Database



MySQL Galera

\* Vendor



MariaDB

\* Version ⓘ

11.4

11.4

10.11

10.6

10.5

10.4



### MariaDB Galera

Database: Vendor: Version:

MySQL Galera MariaDB 11.4

Description:

Galera Cluster for MySQL is a true Multi-Master Cluster based on synchronous replication. It's an easy-to-use, high-availability solution, which provides high system up-time, no data loss and scalability for future growth.

[Learn more](#)

Back

Continue

## Give cluster a name

### Deploy MySQL Galera cluster



1

Cluster details

2

SSH configuration

3

Node configuration

4

Add nodes

5

Preview

#### Name your cluster

Name ⓘ (optional)

ncp

Leave empty and we will generate one for you.

Tags

Type to add tags

Add tags to search or group your database clusters

\* Required

Cancel

Continue

Provide SSH credentials, disable 'Install software', as script will enable repositories on remote hosts to fetch packages from Internet. Disable SELinux/AppArmor for installation time. It will be enabled later in security hardening.

Deploy MySQL Galera cluster

Cluster details

2 SSH configuration

3 Node configuration

4 Add nodes

5 Preview

SSH Credentials

\* SSH user ⓘ

root

\* SSH port ⓘ

22

Install software

Off

\* SSH user key path ⓘ

/root/.ssh/id\_ed25519

SSH sudo password ⓘ

Enter SSH sudo password

Security configuration

☒ Disable firewall

☒ Disable SELinux/AppArmor

\* Required

Back

Continue

Provide node configuration details. Ensure, that database storage location is specified correctly.

```
# as per default
/var/lib/mysql

# for mounted as per instructions above
/mnt/data/mariadb/clusters/ncp/
```

Deploy MySQL Galera cluster

✓ Cluster details

✓ SSH configuration

3 Node configuration

4 Add nodes

5 Preview

Node configuration

\* Server port ⓘ

3306

\* Admin/Root user ⓘ

root

\* Repository ⓘ

Use vendor repositories

Setup and use the vendor's repositories.

[Learn more](#) about vendor repositories.

Configuration template ⓘ

my.cnf.mdb106+-galera

Enable SSL encryption ⓘ

On

\* Server data directory ⓘ

/var/lib/mysql

\* Admin/Root password ⓘ

.....

\* Version ⓘ

11.4

Type to search

\* Required

Back

Continue

Add nodes, all should be green

## Deploy MySQL Galera cluster



- ✓ Cluster details
- ✓ SSH configuration
- ✓ Node configuration
- 4** Add nodes
- 5 Preview

### \* Galera node



Please note that an odd number of nodes is recommended, i.e., 3, 5, 7, etc.

192.168.56.104 ⓘ  
Galera node



Data IP (optional)

192.168.56.105 ⓘ  
Galera node



Data IP (optional)

192.168.56.106 ⓘ  
Galera node



Data IP (optional)

\* Required

Back

Continue

Review config and [Finish]

## Deploy MySQL Galera cluster




- ✓ Cluster details
- ✓ SSH configuration
- ✓ Node configuration
- ✓ Add nodes
- 5** Preview

### Names and tags

ncp

No tags

### Vendor and version

 MariaDB Galera - 11.4

### SSH configuration

SSH user: root

SSH key path: /root/.ssh/id\_ed25519

SSH port: 22

### Node configuration

Server port: 3306

Server data directory: /var/lib/mysql

Configuration template: my.cnf.mdb106+-galera

Admin/Root user: root

Admin/Root password: \*\*\*\*\*

Repository: Use vendor repositories

Enable SSL encryption: **Yes**

### Deploying galera nodes

192.168.56.104

192.168.56.105

192.168.56.106

Back

Finish

Cluster creation status can be followed from Activity Center

The screenshot shows the 'Clusters' page in the ClusterControl interface. A sidebar on the left contains navigation links: Home, Clusters, Nodes, Backups, Activity center, Operational reports, User management, and Settings. The main content area displays a cluster entry for 'nmp MariaDB Galera 11.4' with a progress bar indicating 'Deploy MySQL Galera Cluster' is at 6.52%. A success notification bubble in the top right corner states 'Job created successfully' and 'Deployment could take some time, please wait.' Below the notification are links for 'Activity center' and 'Job details'.

also accessible from Activity Center

The screenshot shows the 'Activity center' page. The sidebar is the same as in the previous image. The main content area has tabs for 'Alarms', 'Jobs', and 'Audit Log'. The 'Jobs' tab is active, showing a table with the following data:

Title	Status	Cluster	Started by	When	Duration	Actions
Deploy MySQL Galera Cluster	Running	N/A	superadmin	2025-02-16 06:30:40 EET	1m 9s	Details, Copy link

Cluster is deployed successfully

The screenshot shows the 'Clusters' page with the 'nmp' cluster now fully deployed. The cluster details show 'ID: 1', 'MariaDB Galera 11.7', and a status of 'Operational'. The 'Nodes' section shows 'Primary' and 'Prometheus' both as green checkmarks. The 'Auto-recovery' section shows 'Cluster' and 'Node' both as 'On' with toggle switches. The 'Load' section shows a green checkmark. A 'Showing 1-1 out of 1' indicator is at the bottom right.

ref.

<https://docs.severalnines.com/docs/clustercontrol/installation/offline-installation/>

In case needed, to remove MariaDB packages and databases themselves:

```
dnf remove maria*
```

```
rm -rf /var/lib/mysql/
```

# Uninstalling and or reinstalling

Remove everything

```
sudo su
systemctl stop mariadb cmon cmon-ssh cmon-events cmon-cloud
dnf remove \
    clustercontrol* \
    s9s* \
    mariadb* \
    httpd*

rm -Rf /var/lib/mysql/
rm -Rf /var/lib/cmon/
rm -rf /var/log/cmon*
rm -Rf /etc/s9s.conf
rm -rf /etc/cmon*
rm -rf /etc/default/cmon
rm -rf /etc/prometheus/
rm -rf /usr/share/cmon/
rm -Rf /root/.s9s
rm -rf /root/s9s_tmp/
rm -rf /tmp/s9s_tmp.local.root/
rm -rf /tmp/ccsetup.conf
rm -rf /tmp/drop.sql
```

Change machine ID in HyperVisor and regenerate it

```
cat /etc/machine-id
f80*****f63b462fa14548b2b8df54c6
rm -f /etc/machine-id
systemd-machine-id-setup --commit --print
cat /etc/machine-id
472*****bf8943dc8285516244b73e8b
```

or modify several bytes in the file

```
vi /etc/machine-id  
cat /etc/machine-id  
4724c3a8bf8943dc8285516244b73eAA
```

Resinstall and open dashboard in private browser window

In registration window, give different credentials.

# Bugs found

Bugs found

# New Page

ClusterControl has outdated script for creating MaxScale load balancer.

```
[22:20:05]:
10.xxx.xxx.xxx:6603: Unknown arguments: monitor-user, monitorUser, monitor-password, monitorPassword
[22:20:05]:
10.xxx.xxx.xxx: Output Unknown arguments: monitor-user, monitorUser, monitor-password, monitorPassword .
[22:20:05]:
10.xxx.xx.xxx: Command was maxctrl create monitor galera_monitor galeramom --monitor-user=maxscale --
monitor-password=xxxxxx
[22:20:05]:
10.xxx.xx.xx: Execution failed with return code 1.
[...]
[22:18:56]:
CMON version 2.3.0.11958.
```