

MySQL Cluster Online Installation Manual

NOTE This procedure assumes that neither the MySQL server nor MySQL NDB Cluster has already been installed on your system; if that is not the case; remove the MySQL server nor MySQL NDB Cluster, including all its executables, libraries, configuration files, and data directories, before you continue. However there is no need to remove the release package you might have used to enable the MySQL Yum repository on your system. Also, this installation manual requires servers have internet access, offline installation will be provided soon.

A. Installation Prerequisite

OS: CentOS 7.3-1611

Network: Internet Connection for “yum” installation

Assumption: Network configuration, including, hostname setting, network addressing is already configured.

1. Download the following: https://ftp.yz.yamagata-u.ac.jp/pub/linux/fedora-projects/epel/7/x86_64/e/epel-release-7-9.noarch.rpm and copy to target server.
2. Install the epel repository.

```
root# rpm -Uvh epel-release-7-9.noarch.rpm
```

NOTE The MySQL Yum repository supports installation of MySQL NDB Cluster only for release 7.5.6 and later, and only for EL5, EL6, and EL7 platforms. For other methods of installing NDB Cluster, see Installation of NDB Cluster 7.3 and 7.4 on Linux, or Installation of NDB Cluster 7.5 on Linux, depending on the release series that you are using.

3. Add MySQL Yum Repository for MySQL NDB Cluster
 - 3.1. Download MySQL release package *platform-and-version-specific-package-name.rpm* in <http://dev.mysql.com/downloads/repo/yum/> and copy to target server.
 - 3.2. Install the downloaded release package with the following command, replacing *platform-and-version-specific-package-name*

```
root# rpm -Uvh mysql57-community-release-el7-11.noarch.rpm
```

NOTE Once the release package is installed on your system, any system-wide update by the yum update command (or dnf upgrade for dnf-enabled systems) will automatically upgrade MySQL packages on your system and also replace any native third-party packages, if Yum finds replacements for them in the MySQL Yum repository.

NOTE Within the MySQL Yum repository (<http://repo.mysql.com/yum/>), the MySQL Community Server and MySQL NDB Cluster are hosted in different subrepositories. By default, the subrepository for the latest GA series of the MySQL server is enabled and the subrepository for MySQL NDB Cluster is disabled. To install NDB Cluster, disable the subrepository for the MySQL server and enable the subrepository for NDB Cluster. If your platform supports the yum-config-manager or dnf config-manager command, you can do that by issuing, for example, the following commands, which disable the subrepository for the MySQL 5.7 series and enable the one for the MySQL NDB Cluster 7.5;

4. Select the MySQL NDB Cluster Subrepository for MySQL NDB Cluster 7.5. This can be done in two ways, either using linux commands or update the *.repo file for mysql.

- 4.1. Enable subrepository for MySQL NDB Cluster.

Using yum-config-manager:

```
root# yum-config-manager --enable mysql-cluster-7.5-community
```

Using msyql repo file (/etc/yum.repos.d/mysql-community.repo)

```
...
[mysql-cluster-7.5-community]
name=MySQL Cluster 7.5 Community
baseurl=http://repo.mysql.com/yum/mysql-cluster-7.5-community/el/7/$basearch/
enabled=0          >> change to 1 to enable
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-mysql
...
```

4.2. Disable subrepository for MySQL 5.7 which is enable by default after installing msyql57-community-release-el7-11.noarch.rpm.

Using yum-config-manager:

```
root# yum-config-manager --disable mysql57-community
```

Using msyql repo file (/etc/yum.repos.d/mysql-community.repo)

```
...
[mysql57-community]
name=MySQL Cluster 5.7 Community
baseurl=http://repo.mysql.com/yum/mysql-5.7-community/el/6/$basearch/
enabled=1          >> change to 0 to disable
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-mysql
...
```

B. MySQL Cluster Installation

Management Node

1. Log in to management node server and install the executables for management nodes.

1.1 Install ndb_mgmd:

```
root# yum install mysql-cluster-community-management-server -y
```

```
Installed:
  mysql-cluster-community-management-server.x86_64

Complete!
[root@mysql-cluster-vm1 MySQL-Cluster-RPMs]#
```

1.2. Install ndb_mgm: yum install mysql-cluster-community-client -y

1.3. Confirm installation is complete.

```
root# which ndb_mgmd
/usr/sbin/ndb_mgmd

root# which ndb_mgm
/usr/sbin/ndb_mgm
```

Data Nodes

1. Log in to data node server and install the executables for ndb nodes.

1.1. Install ndbd:

```
root# yum install mysql-cluster-community-data-node -y
```

```
Installed:
  mysql-cluster-community-data-node.x86_64 0:7.5.6-1.el7

Complete!
[root@mysql-cluster-vm1 MySQL-Cluster-RPMs]#
```

1.2. Confirm installation is complete.

```
root# which ndbd
/usr/sbin/ndbd
```

SQL Nodes

1. Log in to sql node server and install the executables for sql nodes.

- 1.1. Install mysqld and mysql:

```
root# yum install mysql-cluster-community-server -y
```

```
Installed:
  mysql-cluster-community-libs.x86_64 0:7.5.6-1.el7
0:7.5.6-1.el7
  mysql-cluster-community-server.x86_64 0:7.5.6-1.el7
mysql-cluster-community-libs-compact.x86_64

Dependency Installed:
  mysql-cluster-community-client.x86_64 0:7.5.6-1.el7
1.el7
  perl.x86_64 4:5.16.3-291.el7
  perl-Class-MethodMaker.x86_64 0:2.20-1.el7
  perl-Compress-Raw-Zlib.x86_64 1:2.061-4.el7
  perl-Data-Dumper.x86_64 0:2.145-3.el7
  perl-Exporter.noarch 0:5.68-3.el7
  perl-File-Temp.noarch 0:0.23.01-3.el7
  perl-Getopt-Long.noarch 0:2.40-2.el7
  perl-IO-Compress.noarch 0:2.061-2.el7
  perl-PathTools.x86_64 0:3.40-5.el7
  perl-Pod-Escapes.noarch 1:1.04-291.el7
  perl-Pod-Simple.noarch 1:3.28-4.el7
  perl-Scalar-List-Utils.x86_64 0:1.27-248.el7
  perl-Storable.x86_64 0:2.45-3.el7
  perl-Time-HiRes.x86_64 4:1.9725-3.el7
  perl-constant.noarch 0:1.27-2.el7
  perl-macros.x86_64 4:5.16.3-291.el7
  perl-podlators.noarch 0:2.5.1-3.el7
  perl-threads-shared.x86_64 0:1.43-6.el7
  perl-Carp.noarch 0:1.26-244.el7
  perl-Compress-Raw-Bzip2.x86_64 0:2.061-3.el7
  perl-DBI.x86_64 0:1.627-4.el7
  perl-Encode.x86_64 0:2.51-7.el7
  perl-File-Path.noarch 0:2.09-2.el7
  perl-Filter.x86_64 0:1.49-3.el7
  perl-HTTP-Tiny.noarch 0:0.033-3.el7
  perl-Net-Daemon.noarch 0:0.48-5.el7
  perl-PlRPC.noarch 0:0.2020-14.el7
  perl-Pod-Perldoc.noarch 0:3.20-4.el7
  perl-Pod-Usage.noarch 0:1.63-3.el7
  perl-Socket.x86_64 0:2.010-4.el7
  perl-Text-ParseWords.noarch 0:3.29-4.el7
  perl-Time-Local.noarch 0:1.2300-2.el7
  perl-libs.x86_64 4:5.16.3-291.el7
  perl-parent.noarch 1:0.225-244.el7
  perl-threads.x86_64 0:1.87-4.el7

Replaced:
  mariadb-libs.x86_64 1:5.5.52-1.el7

Complete!
[root@mysql-cluster-vm2 MySQL-Cluster-RPMs]#
```

- 1.2. Confirm installation is complete.

```
root# which mysqld
/usr/sbin/mysqld

root# which mysql
/usr/bin/mysql
```

After successful installation of all nodes specified above, proceed to basic configuration guide (MySQL Cluster Configuration Manual) which includes configuration file details and configuration templates according to use cases.

MySQL Cluster Offline Installation Manual

NOTE This procedure assumes no prior MySQL (Server or NBD Cluster) installation on the target servers. If otherwise, installation including all its executables, libraries, configuration files, and data directories must be removed.

A. Installation Prerequisite

OS: CentOS 7.3-1611

Assumption: Network configuration, including, hostname setting, network addressing is already configured.

1. Download and copy the following 36 dependencies to the servers where the MySQL Cluster is to be installed:

```
net-tools-2.0-0.17.20131004git.el7.x86_64.rpm
perl-5.16.3-291.el7.x86_64.rpm
perl-Carp-1.26-244.el7.noarch.rpm
perl-Class-MethodMaker-2.20-1.el7.x86_64.rpm
perl-Compress-Raw-Bzip2-2.061-3.el7.x86_64.rpm
perl-Compress-Raw-Zlib-2.061-4.el7.x86_64.rpm
perl-constant-1.27-2.el7.noarch.rpm
perl-Data-Dumper-2.145-3.el7.x86_64.rpm
perl-DBI-1.627-4.el7.x86_64.rpm
perl-Encode-2.51-7.el7.x86_64.rpm
perl-Exporter-5.68-3.el7.noarch.rpm
perl-File-Path-2.09-2.el7.noarch.rpm
perl-File-Temp-0.23.01-3.el7.noarch.rpm
perl-Filter-1.49-3.el7.x86_64.rpm
perl-Getopt-Long-2.40-2.el7.noarch.rpm
perl-HTTP-Tiny-0.033-3.el7.noarch.rpm
perl-IO-Compress-2.061-2.el7.noarch.rpm
perl-libs-5.16.3-291.el7.x86_64.rpm
perl-macros-5.16.3-291.el7.x86_64.rpm
perl-Net-Daemon-0.48-5.el7.noarch.rpm
perl-parent-0.225-244.el7.noarch.rpm
perl-PathTools-3.40-5.el7.x86_64.rpm
perl-PlRPC-0.2020-14.el7.noarch.rpm
perl-Pod-Escapes-1.04-291.el7.noarch.rpm
perl-podlators-2.5.1-3.el7.noarch.rpm
perl-Pod-Perldoc-3.20-4.el7.noarch.rpm
perl-Pod-Simple-3.28-4.el7.noarch.rpm
perl-Pod-Usage-1.63-3.el7.noarch.rpm
perl-Scalar-List-Utils-1.27-248.el7.x86_64.rpm
perl-Socket-2.010-4.el7.x86_64.rpm
perl-Storable-2.45-3.el7.x86_64.rpm
perl-Text-ParseWords-3.29-4.el7.noarch.rpm
perl-threads-1.87-4.el7.x86_64.rpm
perl-threads-shared-1.43-6.el7.x86_64.rpm
perl-Time-HiRes-1.9725-3.el7.x86_64.rpm
perl-Time-Local-1.2300-2.el7.noarch.rpm
```

2. Install the dependencies all at once.

```
root# rpm -Uvh perl-Carp-1.26-244.el7.noarch.rpm perl-Exporter-5.68-3.el7.noarch.rpm
perl-5.16.3-291.el7.x86_64.rpm perl-macros-5.16.3-291.el7.x86_64.rpm perl-libs-5.16.3-
291.el7.x86_64.rpm perl-constant-1.27-2.el7.noarch.rpm perl-Socket-2.010-
4.el7.x86_64.rpm perl-Scalar-List-Utils-1.27-248.el7.x86_64.rpm perl-Storable-2.45-
3.el7.x86_64.rpm perl-threads-1.87-4.el7.x86_64.rpm perl-threads-shared-1.43-
6.el7.x86_64.rpm perl-Time-HiRes-1.9725-3.el7.x86_64.rpm perl-Time-Local-1.2300-
2.el7.noarch.rpm perl-File-Path-2.09-2.el7.noarch.rpm perl-File-Temp-0.23.01-
3.el7.noarch.rpm perl-Filter-1.49-3.el7.x86_64.rpm perl-Pod-Simple-3.28-
4.el7.noarch.rpm perl-Pod-Escapes-1.04-291.el7.noarch.rpm perl-Getopt-Long-2.40-
2.el7.noarch.rpm perl-Text-ParseWords-3.29-4.el7.noarch.rpm perl-Pod-Usage-1.63-
3.el7.noarch.rpm perl-Pod-Perldoc-3.20-4.el7.noarch.rpm perl-parent-0.225-
244.el7.noarch.rpm perl-HTTP-Tiny-0.033-3.el7.noarch.rpm perl-Encode-2.51-
7.el7.x86_64.rpm perl-PathTools-3.40-5.el7.x86_64.rpm perl-podlators-2.5.1-
3.el7.noarch.rpm net-tools-2.0-0.17.20131004git.el7.x86_64.rpm perl-Data-Dumper-2.145-
3.el7.x86_64.rpm perl-DBI-1.627-4.el7.x86_64.rpm perl-PlRPC-0.2020-14.el7.noarch.rpm
perl-Net-Daemon-0.48-5.el7.noarch.rpm perl-IO-Compress-2.061-2.el7.noarch.rpm perl-
Compress-Raw-Bzip2-2.061-3.el7.x86_64.rpm perl-Compress-Raw-Zlib-2.061-4.el7.x86_64.rpm
perl-Class-MethodMaker-2.20-1.el7.x86_64.rpm
```

```

Preparing... ##### [100%]
Updating / installing...
 1:perl-parent-1.0.225-244.el7 ##### [ 3%]
 2:perl-HTTP-Tiny-0.033-3.el7 ##### [ 6%]
 3:perl-Pod-Perldoc-3.20-4.el7 ##### [ 8%]
 4:perl-podlators-2.5.1-3.el7 ##### [11%]
 5:perl-Pod-Escapes-1.1.04-291.el7 ##### [14%]
 6:perl-Text-ParseWords-3.29-4.el7 ##### [17%]
 7:perl-Encode-2.51-7.el7 ##### [19%]
 8:perl-Pod-Usage-1.63-3.el7 ##### [22%]
 9:perl-Exporter-5.68-3.el7 ##### [25%]
10:perl-macros-4:5.16.3-291.el7 ##### [28%]
11:perl-libs-4:5.16.3-291.el7 ##### [31%]
12:perl-constant-1.27-2.el7 ##### [33%]
13:perl-Socket-2.010-4.el7 ##### [36%]
14:perl-Scalar-List-Utils-1.27-248.el7 ##### [39%]
15:perl-Storable-2.45-3.el7 ##### [42%]
16:perl-threads-1.87-4.el7 ##### [44%]
17:perl-threads-shared-1.43-6.el7 ##### [47%]
18:perl-Time-HiRes-4:1.9725-3.el7 ##### [50%]
19:perl-Time-Local-1.2300-2.el7 ##### [53%]
20:perl-Filter-1.49-3.el7 ##### [56%]
21:perl-File-Path-2.09-2.el7 ##### [58%]
22:perl-File-Temp-0.23.01-3.el7 ##### [61%]
23:perl-PathTools-3.40-5.el7 ##### [64%]
24:perl-Pod-Simple-1:3.28-4.el7 ##### [67%]
25:perl-Getopt-Long-2.40-2.el7 ##### [69%]
26:perl-Carp-1.26-244.el7 ##### [72%]
27:perl-4:5.16.3-291.el7 ##### [75%]
28:perl-Data-Dumper-2.145-3.el7 ##### [78%]
29:perl-Net-Daemon-0.48-5.el7 ##### [81%]
30:perl-Compress-Raw-Bzip2-2.061-3.el7 ##### [83%]
31:perl-Compress-Raw-Zlib-1:2.061-4.el7 ##### [86%]
32:perl-IO-Compress-2.061-2.el7 ##### [89%]
33:perl-PlRPC-0.2020-14.el7 ##### [92%]
34:perl-DBI-1.627-4.el7 ##### [94%]
35:perl-Class-MethodMaker-2.20-1.el7 ##### [97%]
36:net-tools-2.0-0.17.20131004git.el7 ##### [100%]

```

3. Remove mariadb-libs-5.5.52-1.el7.x86_64 since it will interfere with the installation of MySQL Cluster 7.5. This also removes dependency “postfix.x86_64 2:2.10.1-6.el7”.

```
root# yum remove mariadb-libs-5.5.52-1.el7.x86_64 -y
```

```

Removed:
  mariadb-libs.x86_64 1:5.5.52-1.el7

Dependency Removed:
  postfix.x86_64 2:2.10.1-6.el7

Complete!

```

B. Installation Procedure

Management (MGM) Node

1. Log in to management node server and install “mysql-cluster-community-management-server-7.5.7-1.el7.x86_64.rpm” for **ndb_mgmd**

```
root# rpm -Uvh mysql-cluster-community-management-server-7.5.7-1.el7.x86_64.rpm
```

```
Preparing... ##### [100%]
Updating / installing...
 1:mysql-cluster-community-managemen##### [100%]
```

2. Install dependencies “mysql-cluster-community-libs-7.5.7-1.el7.x86_64.rpm” and “mysql-cluster-community-common-7.5.7-1.el7.x86_64.rpm” for installation of **ndb_mgm**.

```
root# rpm -Uvh mysql-cluster-community-libs-7.5.7-1.el7.x86_64.rpm mysql-cluster-
community-common-7.5.7-1.el7.x86_64.rpm
```

```
Preparing... ##### [100%]
Updating / installing...
 1:mysql-cluster-community-common-7.##### [ 50%]
 2:mysql-cluster-community-libs-7.5.##### [100%]
```

3. Install “mysql-cluster-community-client-7.5.7-1.el7.x86_64.rpm” for **ndb_mgm**.

```
root# rpm -Uvh mysql-cluster-community-client-7.5.7-1.el7.x86_64.rpm
```

```
Preparing... ##### [100%]
Updating / installing...
 1:mysql-cluster-community-client-7.##### [100%]
```

4. Verify that **ndb_mgmd** and **ndb_mgm** have been installed.

```
root# which ndb_mgmd
/usr/sbin/ndb_mgmd

root# which ndb_mgm
/usr/bin/ndb_mgm
```

Data (NDB) Nodes

1. Log in to data node server and install “mysql-cluster-community-data-node-7.5.7-1.el7.x86_64.rpm” for **ndbd** and **ndbmtd**.

```
root# rpm -Uvh mysql-cluster-community-data-node-7.5.7-1.el7.x86_64.rpm
```

```
Preparing... ##### [100%]
Updating / installing...
 1:mysql-cluster-community-data-node##### [100%]
```

2. Verify that **ndbd** and **ndbmtd** have been installed.

```
root# which ndbd
/usr/sbin/ndbd

root# which ndbmtd
/usr/sbin/ndbmtd
```

SQL Nodes

1. Log in to SQL node server and Install dependencies “mysql-cluster-community-libs-7.5.7-1.el7.x86_64.rpm” and “mysql-cluster-community-common-7.5.7-1.el7.x86_64.rpm” for installation of **mysqladmin**, **mysqld** and **mysql**.

```
root# rpm -Uvh mysql-cluster-community-libs-7.5.7-1.el7.x86_64.rpm mysql-cluster-community-common-7.5.7-1.el7.x86_64.rpm
```

```
Preparing... ##### [100%]  
Updating / installing..  
 1:mysql-cluster-community-common-7. ##### [ 50%]  
 2:mysql-cluster-community-libs-7.5. ##### [100%]
```

2. Install “mysql-cluster-community-client-7.5.7-1.el7.x86_64.rpm” for **mysqladmin** and **mysql**.

```
root# rpm -Uvh mysql-cluster-community-client-7.5.7-1.el7.x86_64.rpm
```

```
Preparing... ##### [100%]  
Updating / installing..  
 1:mysql-cluster-community-client-7. ##### [100%]
```

3. Install “mysql-cluster-community-server-7.5.7-1.el7.x86_64.rpm” for **mysqld**.

```
root# rpm -Uvh mysql-cluster-community-server-7.5.7-1.el7.x86_64.rpm
```

```
Preparing... ##### [100%]  
Updating / installing..  
 1:mysql-cluster-community-client-7. ##### [100%]
```

4. Verify that **mysqladmin**, **mysqld** and **mysql** have been installed.

```
root# which mysqladmin  
/usr/bin/mysqladmin  
  
root# which mysqld  
/usr/sbin/mysqld  
  
root# which mysql  
/usr/bin/mysql
```

C. Post-installation Procedure

After successful installation of MySQL Cluster on the servers of all nodes in the preceding procedure, proceed to basic configuration guide (MySQL Cluster Configuration Manual) which includes configuration file details and configuration templates according to use cases.