**CÀI ĐẶT DATABASE MYSQL CLUSTER**

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1. **Mô hình:**

Chạy MySQL Cluster Percona gồm 3 node:

* Node 1: 172.17.0.2
* Node 2: 172.17.0.3
* Node 3: 172.17.0.4

1. **Chuẩn bị:**

* Tắt chế độ selinux

*Mở file /etc/sysconfig/selinux và chuyển SELINUX sang disabled*

* Tắt firewallservice firewalld stop

*systemctl disable firewalld*

* Gỡ các gói liên quan tới mysql

*yum remove mysql\* -y*

* Cài đặt lại hostname server
* Cài đặt timezone server

1. **Cài đặt:**

* Cài đặt gói Percona release, chạy lệnh:

*yum install* [*https://repo.percona.com/yum/percona-release-latest.noarch.rpm*](https://repo.percona.com/yum/percona-release-latest.noarch.rpm) *-y*

* Cài đặt gói MySQL Percona:

*yum install Percona-XtraDB-Cluster-57 -y –nogpgcheck*

* Giới hạ gói cài đặt:

*percona-release enable-only original release*

*percona-release enable tools release*

1. **Cấu hình:**
   1. **Cấu hình Node 1:**

* Start mysql bằng lệnh:

*systemctl start mysql*

* Pass default:

*grep 'temporary password' /var/log/mysqld.log*

* Login vào mysql và tạo account đồng bộ:

*Set password=password(‘vYSuh8N2dIFtRQg’);*

*Create user sstuser@’%’ identified by ‘NtTwOJPkxRc5viy’;*

*Grant process, reload, lock tables, replication client on \*.\* to sstuser@’%’;*

*Flush privileges;*

* Cấu hình file /etc/percona-xtradb-cluster.conf.d/wsrep.cnf:

*[mysqld]*

*# Path to Galera library*

*wsrep\_provider=/usr/lib64/galera3/libgalera\_smm.so*

*# Cluster connection URL contains IPs of nodes*

*#If no IP is found, this implies that a new cluster needs to be created,*

*#in order to do that you need to bootstrap this node*

*wsrep\_cluster\_address=gcomm://172.17.0.2,172.17.0.3,172.17.0.4*

*# In order for Galera to work correctly binlog format should be ROW*

*binlog\_format=ROW*

*# MyISAM storage engine has only experimental support*

*default\_storage\_engine=InnoDB*

*# Slave thread to use*

*wsrep\_slave\_threads= 8*

*wsrep\_log\_conflicts*

*# This changes how InnoDB autoincrement locks are managed and is a requirement for Galera*

*innodb\_autoinc\_lock\_mode=2*

*# Node IP address*

*wsrep\_node\_address=172.17.0.2*

*# Cluster name*

*wsrep\_cluster\_name=pxc-cluster*

*#If wsrep\_node\_name is not specified, then system hostname will be used*

*wsrep\_node\_name=gmb02-db01*

*#pxc\_strict\_mode allowed values: DISABLED,PERMISSIVE,ENFORCING,MASTER*

*pxc\_strict\_mode=ENFORCING*

*# SST method*

*wsrep\_sst\_method=xtrabackup-v2*

*#Authentication for SST method*

*wsrep\_sst\_auth="sstuser:NtTwOJPkxRc5viy"*

* Cấu hình file /etc/my.cnf.d/server.cnf trên cả 3 Node 1, 2 và 3

*[client]*

*default-character-set = utf8*

*[mysqld]*

*datadir=/var/lib/mysql*

*user=mysql*

*#Tunning*

*wsrep\_slave\_threads=64*

*wsrep\_provider\_options="gcs.fc\_limit=320;gcs.fc\_factor=0.8"*

*skip-name-resolve=1*

*# GENERAL #*

*socket = /var/lib/mysql/mysql.sock*

*pid-file = /var/lib/mysql/mysql.pid*

*# SAFETY #*

*max-connect-errors = 1000000*

*skip-name-resolve*

*sql-mode = ERROR\_FOR\_DIVISION\_BY\_ZERO,NO\_AUTO\_CREATE\_USER,NO\_AUTO\_VALUE\_ON\_ZERO,NO\_ENGINE\_SUBSTITUTION,NO\_ZERO\_DATE,NO\_ZERO\_IN\_DATE*

*# DATA STORAGE #*

*datadir = /var/lib/mysql/*

*# CACHES AND LIMITS #*

*open\_files\_limit = 65535*

*table\_definition\_cache = 8864*

*table\_open\_cache = 8864*

*thread\_pool\_size = 24*

*join\_buffer\_size = 128M*

*max\_connections = 640*

*interactive\_timeout = 310000*

*wait\_timeout = 31000*

*query\_cache\_size = 48M*

*#table\_cache = 320*

*tmp\_table\_size = 52M*

*thread\_cache\_size = 8*

*sort\_buffer\_size = 256K*

*max\_allowed\_packet = 32M*

*# INNODB #*

*innodb\_flush\_method = O\_DIRECT*

*innodb\_log\_files\_in\_group = 2*

*innodb\_log\_file\_size = 5G*

*innodb\_flush\_log\_at\_trx\_commit = 1*

*innodb\_file\_per\_table = 1*

*innodb\_buffer\_pool\_size = 16G*

*innodb\_buffer\_pool\_instances = 33*

*innodb\_write\_io\_threads = 20*

*innodb\_read\_io\_threads = 20*

*innodb\_thread\_concurrency = 8*

*# LOGGING #*

*log\_error = /var/log/mysql/mysql-error.log*

*log\_queries\_not\_using\_indexes = 1*

*slow\_query\_log = 1*

*slow\_query\_log\_file = /var/log/mysql/mysql-slow.log*

*##MySAM*

*myisam\_max\_sort\_file\_size = 1G*

*myisam\_sort\_buffer\_size = 100M*

*### pmm*

*log\_output=file*

*slow\_query\_log=ON*

*long\_query\_time=1*

*log\_slow\_rate\_limit=100*

*log\_slow\_rate\_type=query*

*log\_slow\_verbosity=full*

*log\_slow\_admin\_statements=ON*

*log\_slow\_slave\_statements=ON*

*slow\_query\_log\_always\_write\_time=1*

*slow\_query\_log\_use\_global\_control=all*

*innodb\_monitor\_enable=all*

*userstat=1*

*## schedule*

*event\_scheduler=ON*

*# Go tieng Viet*

*character-set-client-handshake = TRUE*

*init-connect='SET NAMES utf8'*

*character-set-server = utf8*

*collation-server = utf8\_unicode\_ci*

*lower\_case\_table\_names=1*

* Stop mysql:

*service mysql stop*

* Khởi động node đầu tiên với cấu hình cluster.

*systemctl start mysql@bootstrap*

* 1. **Cấu hình Node 2:**
* Cấu hình file /etc/percona-xtradb-cluster.conf.d/wsrep.cnf:

*[mysqld]*

*# Path to Galera library*

*wsrep\_provider=/usr/lib64/galera3/libgalera\_smm.so*

*# Cluster connection URL contains IPs of nodes*

*#If no IP is found, this implies that a new cluster needs to be created,*

*#in order to do that you need to bootstrap this node*

*wsrep\_cluster\_address=gcomm://172.17.0.2,172.17.0.3,172.17.0.4*

*# In order for Galera to work correctly binlog format should be ROW*

*binlog\_format=ROW*

*# MyISAM storage engine has only experimental support*

*default\_storage\_engine=InnoDB*

*# Slave thread to use*

*wsrep\_slave\_threads= 8*

*wsrep\_log\_conflicts*

*# This changes how InnoDB autoincrement locks are managed and is a requirement for Galera*

*innodb\_autoinc\_lock\_mode=2*

*# Node IP address*

*wsrep\_node\_address=172.17.0.3*

*# Cluster name*

*wsrep\_cluster\_name=pxc-cluster*

*#If wsrep\_node\_name is not specified, then system hostname will be used*

*wsrep\_node\_name=gmb02-db02*

*#pxc\_strict\_mode allowed values: DISABLED,PERMISSIVE,ENFORCING,MASTER*

*pxc\_strict\_mode=ENFORCING*

*# SST method*

*wsrep\_sst\_method=xtrabackup-v2*

*#Authentication for SST method*

*wsrep\_sst\_auth="sstuser:NtTwOJPkxRc5viy"*

* Cấu hình file /etc/my.cnf.d/server.cnf

*[client]*

*default-character-set = utf8*

*[mysqld]*

*datadir=/var/lib/mysql*

*user=mysql*

*#Tunning*

*wsrep\_slave\_threads=64*

*wsrep\_provider\_options="gcs.fc\_limit=320;gcs.fc\_factor=0.8"*

*skip-name-resolve=1*

*# GENERAL #*

*socket = /var/lib/mysql/mysql.sock*

*pid-file = /var/lib/mysql/mysql.pid*

*# SAFETY #*

*max-connect-errors = 1000000*

*skip-name-resolve*

*sql-mode = ERROR\_FOR\_DIVISION\_BY\_ZERO,NO\_AUTO\_CREATE\_USER,NO\_AUTO\_VALUE\_ON\_ZERO,NO\_ENGINE\_SUBSTITUTION,NO\_ZERO\_DATE,NO\_ZERO\_IN\_DATE*

*# DATA STORAGE #*

*datadir = /var/lib/mysql/*

*# CACHES AND LIMITS #*

*open\_files\_limit = 65535*

*table\_definition\_cache = 8864*

*table\_open\_cache = 8864*

*thread\_pool\_size = 24*

*join\_buffer\_size = 128M*

*max\_connections = 640*

*interactive\_timeout = 310000*

*wait\_timeout = 31000*

*query\_cache\_size = 48M*

*#table\_cache = 320*

*tmp\_table\_size = 52M*

*thread\_cache\_size = 8*

*sort\_buffer\_size = 256K*

*max\_allowed\_packet = 32M*

*# INNODB #*

*innodb\_flush\_method = O\_DIRECT*

*innodb\_log\_files\_in\_group = 2*

*innodb\_log\_file\_size = 5G*

*innodb\_flush\_log\_at\_trx\_commit = 1*

*innodb\_file\_per\_table = 1*

*innodb\_buffer\_pool\_size = 16G*

*innodb\_buffer\_pool\_instances = 33*

*innodb\_write\_io\_threads = 20*

*innodb\_read\_io\_threads = 20*

*innodb\_thread\_concurrency = 8*

*# LOGGING #*

*log\_error = /var/log/mysql/mysql-error.log*

*log\_queries\_not\_using\_indexes = 1*

*slow\_query\_log = 1*

*slow\_query\_log\_file = /var/log/mysql/mysql-slow.log*

*##MySAM*

*myisam\_max\_sort\_file\_size = 1G*

*myisam\_sort\_buffer\_size = 100M*

*### pmm*

*log\_output=file*

*slow\_query\_log=ON*

*long\_query\_time=1*

*log\_slow\_rate\_limit=100*

*log\_slow\_rate\_type=query*

*log\_slow\_verbosity=full*

*log\_slow\_admin\_statements=ON*

*log\_slow\_slave\_statements=ON*

*slow\_query\_log\_always\_write\_time=1*

*slow\_query\_log\_use\_global\_control=all*

*innodb\_monitor\_enable=all*

*userstat=1*

*## schedule*

*event\_scheduler=ON*

*# Go tieng Viet*

*character-set-client-handshake = TRUE*

*init-connect='SET NAMES utf8'*

*character-set-server = utf8*

*collation-server = utf8\_unicode\_ci*

*lower\_case\_table\_names=1*

* Start node 2:

Service mysql start

* 1. **Cấu hình Node 3:**
* Cấu hình file /etc/percona-xtradb-cluster.conf.d/wsrep.cnf:

*[mysqld]*

*# Path to Galera library*

*wsrep\_provider=/usr/lib64/galera3/libgalera\_smm.so*

*# Cluster connection URL contains IPs of nodes*

*#If no IP is found, this implies that a new cluster needs to be created,*

*#in order to do that you need to bootstrap this node*

*wsrep\_cluster\_address=gcomm://172.17.0.2,172.17.0.3,172.17.0.4*

*# In order for Galera to work correctly binlog format should be ROW*

*binlog\_format=ROW*

*# MyISAM storage engine has only experimental support*

*default\_storage\_engine=InnoDB*

*# Slave thread to use*

*wsrep\_slave\_threads= 8*

*wsrep\_log\_conflicts*

*# This changes how InnoDB autoincrement locks are managed and is a requirement for Galera*

*innodb\_autoinc\_lock\_mode=2*

*# Node IP address*

*wsrep\_node\_address=172.17.0.4*

*# Cluster name*

*wsrep\_cluster\_name=pxc-cluster*

*#If wsrep\_node\_name is not specified, then system hostname will be used*

*wsrep\_node\_name=gmb02-db03*

*#pxc\_strict\_mode allowed values: DISABLED,PERMISSIVE,ENFORCING,MASTER*

*pxc\_strict\_mode=ENFORCING*

*# SST method*

*wsrep\_sst\_method=xtrabackup-v2*

*#Authentication for SST method*

*wsrep\_sst\_auth="sstuser:NtTwOJPkxRc5viy"*

* Cấu hình file /etc/my.cnf.d/server.cnf

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*default-character-set = utf8*

*[mysqld]*

*datadir=/var/lib/mysql*

*user=mysql*

*#Tunning*

*wsrep\_slave\_threads=64*

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*# GENERAL #*

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*pid-file = /var/lib/mysql/mysql.pid*

*# SAFETY #*

*max-connect-errors = 1000000*

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*sql-mode = ERROR\_FOR\_DIVISION\_BY\_ZERO,NO\_AUTO\_CREATE\_USER,NO\_AUTO\_VALUE\_ON\_ZERO,NO\_ENGINE\_SUBSTITUTION,NO\_ZERO\_DATE,NO\_ZERO\_IN\_DATE*

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*slow\_query\_log=ON*

*long\_query\_time=1*

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*log\_slow\_rate\_type=query*

*log\_slow\_verbosity=full*

*log\_slow\_admin\_statements=ON*

*log\_slow\_slave\_statements=ON*

*slow\_query\_log\_always\_write\_time=1*

*slow\_query\_log\_use\_global\_control=all*

*innodb\_monitor\_enable=all*

*userstat=1*

*## schedule*

*event\_scheduler=ON*

*# Go tieng Viet*

*character-set-client-handshake = TRUE*

*init-connect='SET NAMES utf8'*

*character-set-server = utf8*

*collation-server = utf8\_unicode\_ci*

*lower\_case\_table\_names=1*

* Start node 3:

Service mysql start

1. **Start/Stop và check log cluster:**
   1. **Node 1:**

* Stop mysql

*systemctl stop mysql@bootstrap*

*systemctl stop mysql*

* Start mysql

*systemctl start mysql*

* Check mysql

*systemctl status mysql*

*check log ứng dụng mysql tài đường dẫn /var/log/mysqld.log*

* 1. **Node 2:**
* Stop mysql

*systemctl stop mysql*

* Start mysql

*systemctl start mysql*

* Check mysql

*systemctl status mysql*

*check log ứng dụng mysql tài đường dẫn /var/log/mysqld.log*

* 1. **Node 3:**
* Stop mysql

*systemctl stop mysql*

* Start mysql

*systemctl start mysql*

* Check mysql

*systemctl status mysql*

*check log ứng dụng mysql tài đường dẫn /var/log/mysqld.log*

1. **Check đồng bộ:**

* Login mysql thông qua tài khoản root và chạy lệnh kiểm tra trên cả 3 Node

*SHOW STATUS LIKE 'wsrep\_local\_state\_comment';*

*show global status like 'wsrep\_cluster\_size';*

*show global status like 'wsrep%';*

