Лабораторная работа

Номер 6

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01 января 1970

Российский университет дружбы народов, Москва, Россия

Информация

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Цель работы

Приобретение практических навыков по установке и конфигурированию системы управления базами данных на примере программного обеспечения MariaDB.

Запуск сервера

```
C:\Users\denis>cd C:\work_asp\dmmosharov\vagrant

C:\work_asp\dmmosharov\vagrant>vagrant up server
Bringing machine 'server' up with 'virtualbox' provider...
==> server: You assigned a static IP ending in ".1" or ":1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: You assigned a static IP ending in ".1" or ":1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: Clearing any previously set forwarded ports...
==> server: Clearing any previously set network interfaces...
==> server: Preparing network interfaces based on configuration...
    server: Adapter 1: nat
    server: Adapter 2: intnet
==> server: Forwarding ports...
    server: 22 (guest) => 2222 (host) (adapter 1)
==> server: Running 'pre-boot' VM customizations...
==> server: Booting VM...
==> server: Waiting for machine to boot. This may take a few minutes...
    server: SSH address: 127.0.0.1:2222
    server: SSH username: vagrant
    server: SSH auth method: password
```

Рис. 1: Запуск сервера

Установка пакета

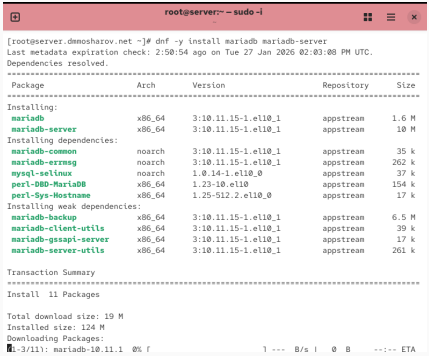

Рис. 2: Установка пакета

/etc/my.cnf

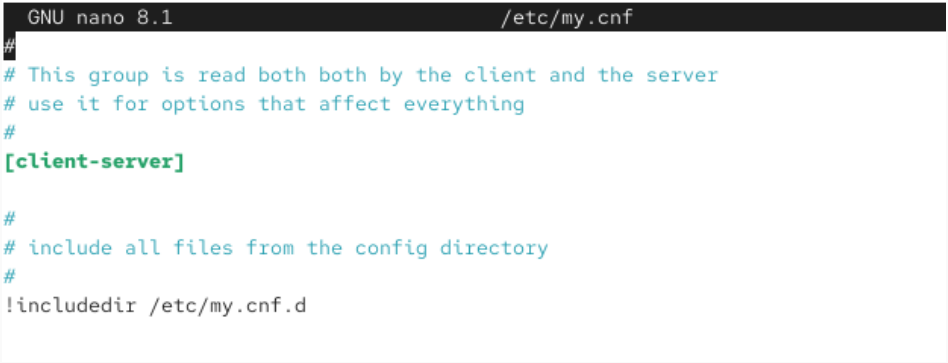

Рис. 3: /etc/my.cnf

auth_gssapi.cnf

Рис. 4: auth_gssapi.cnf

mariadb-server.cnf

Рис. 5: mariadb-server.cnf

provider_lz4.cnf

```
  GNU nano 8.1                                  provider_lz4.cnf
[server]
plugin_load_add=provider_lz4
provider_lz4=force_plus_permanent
```

Рис. 6: provider_lz4.cnf

spider.cnf

Рис. 7: spider.cnf

client.cnf

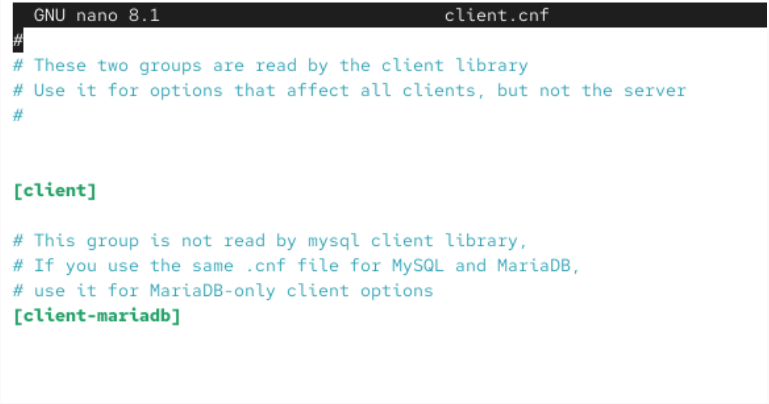

Рис. 8: client.cnf

mysql-clients.cnf

Рис. 9: mysql-clients.cnf

provider_lzo.cnf

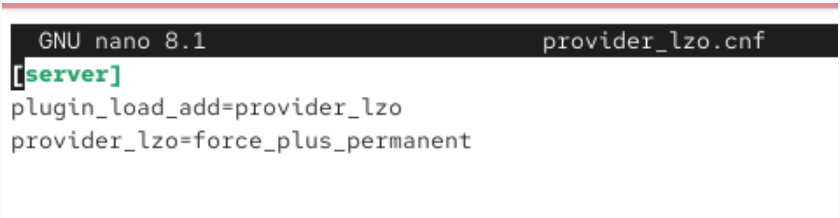

Рис. 10: provider_lzo.cnf

enable_encryption.preset

Рис. 11: enable_encryption.preset

provider_bzip2.cnf

Рис. 12: provider_bzip2.cnf

provider_snappy.cnf

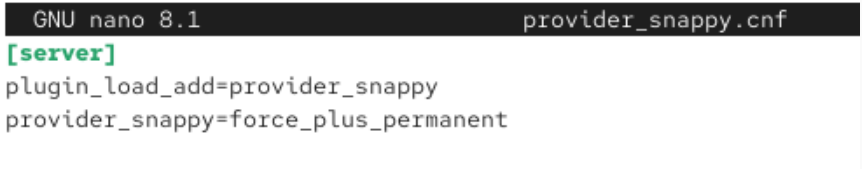

Рис. 13: provider_snappy.cnf

Запуск mariadb

```
[root@server.dmmosharov.net my.cnf.d]# systemctl start mariadb
[root@server.dmmosharov.net my.cnf.d]# systemctl enable mariadb
Created symlink '/etc/systemd/system/mysql.service' → '/usr/lib/systemd/system/mariadb.se
rvice'.
Created symlink '/etc/systemd/system/mysqld.service' → '/usr/lib/systemd/system/mariadb.s
ervice'.
Created symlink '/etc/systemd/system/multi-user.target.wants/mariadb.service' → '/usr/lib
/systemd/system/mariadb.service'.
[root@server.dmmosharov.net my.cnf.d]# ss -tulpen | grep mysql
[root@server.dmmosharov.net my.cnf.d]# ss -tulpen | grep maria
tcp   LISTEN 0      80                                   0.0.0.0:3306       0.0.0.0:*
users:(("mariadbd",pid=111716,fd=20))
                                        uid:27 ino:1435582 sk:2025 cgroup:/system.sli
ce/mariadb.service <->
tcp   LISTEN 0      80                                      [::]:3306          [::]:*
users:(("mariadbd",pid=111716,fd=21))
                                        uid:27 ino:1435583 sk:202e cgroup:/system.sli
ce/mariadb.service v6only:1 <->
[root@server.dmmosharov.net my.cnf.d]#
```

Рис. 14: Запуск mariadb

Настройка БД

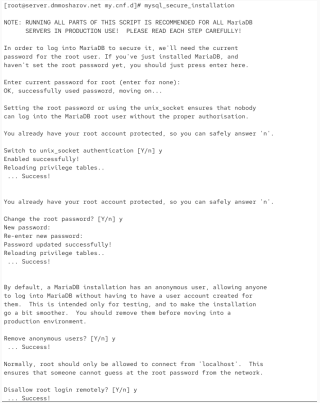

Рис. 15: Настройка БД

Подключение к БД

Рис. 16: Подключение к БД

Списки БД

```
MariaDB [(none)]> SHOW DATABASES;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.000 sec)

MariaDB [(none)]> exit;
Bye
[root@server.dmmosharov.net my.cnf.d]#
```

Рис. 17: Списки БД

Статус БД

```
[root@server.dmmosharov.net my.cnf.d]# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 14
Server version: 10.11.15-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)]> status
--------------
mysql  Ver 15.1 Distrib 10.11.15-MariaDB, for Linux (x86_64) using  EditLine wrapper

Connection id:          14
Current database:
Current user:           root@localhost
SSL:                    Not in use
Current pager:          stdout
Using outfile:          ''
Using delimiter:        ;
Server:                 MariaDB
Server version:         10.11.15-MariaDB MariaDB Server
Protocol version:       10
Connection:             Localhost via UNIX socket
Server characterset:    latin1
Db      characterset:   latin1
Client characterset:    utf8mb3
Conn.  characterset:    utf8mb3
UNIX socket:            /var/lib/mysql/mysql.sock
Uptime:                 4 min 57 sec

Threads: 1  Questions: 27  Slow queries: 0  Opens: 20  Open tables: 13  Queries per secon
d avg: 0.090
--------------

MariaDB [(none)]> exit;
Bye
[root@server.dmmosharov.net my.cnf.d]#
```

Рис. 18: Статус БД

Создание файла конфигурации

```
[root@server.dmmosharov.net my.cnf.d]# cd /etc/my.cnf.d
[root@server.dmmosharov.net my.cnf.d]# touch utf8.cnf
[root@server.dmmosharov.net my.cnf.d]# nano uth8.cnf
[root@server.dmmosharov.net my.cnf.d]#
```

Рис. 19: Создание файла конфигурации

Содержание файла utf8

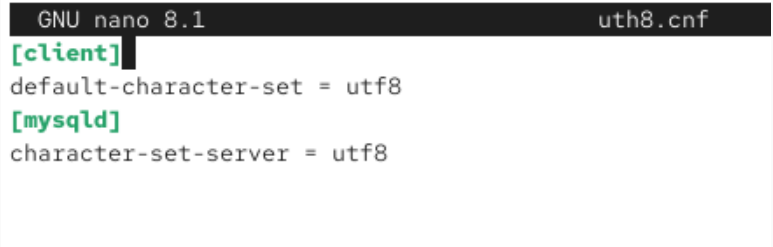

Рис. 20: Содержание файла utf8

Успешная смена кодировки

```
[root@server.dmmosharov.net my.cnf.d]# systemctl restart mariadb
[root@server.dmmosharov.net my.cnf.d]# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 3
Server version: 10.11.15-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)]> status
--------------
mysql  Ver 15.1 Distrib 10.11.15-MariaDB, for Linux (x86_64) using  EditLine wrapper

Connection id:          3
Current database:
Current user:           root@localhost
SSL:                    Not in use
Current pager:          stdout
Using outfile:          ''
Using delimiter:        ;
Server:                 MariaDB
Server version:         10.11.15-MariaDB MariaDB Server
Protocol version:       10
Connection:             Localhost via UNIX socket
Server characterset:    utf8mb3
Db     characterset:    utf8mb3
Client characterset:    utf8mb3
Conn.  characterset:    utf8mb3
UNIX socket:            /var/lib/mysql/mysql.sock
Uptime:                 20 sec

Threads: 1  Questions: 4  Slow queries: 0  Opens: 17  Open tables: 10  Queries per second
 avg: 0.200
--------------

MariaDB [(none)]> exit;
```

Рис. 21: Успешная смена кодировки

Наполнение таблицы

```
MariaDB [(none)]> CREATE DATABASE addressbook CHARACTER SET utf8 COLLATE utf8_general_ci;

Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> USE addressbook;
Database changed
MariaDB [addressbook]> HOW TABLES;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that correspon
ds to your MariaDB server version for the right syntax to use near 'HOW TABLES' at line 1
MariaDB [addressbook]> SHOW TABLES;
Empty set (0.000 sec)

MariaDB [addressbook]> CREATE TABLE city(name VARCHAR(40), city VARCHAR(40));
Query OK, 0 rows affected (0.004 sec)

MariaDB [addressbook]> INSERT INTO city(name,city) VALUES ('Иванов','Мсква');
Query OK, 1 row affected (0.001 sec)

MariaDB [addressbook]> INSERT INTO city(name,city) VALUES ('Петров','Сочи');
Query OK, 1 row affected (0.001 sec)

MariaDB [addressbook]> INSERT INTO city(name,city) VALUES ('Сидоров','Дубна');
Query OK, 1 row affected (0.001 sec)

MariaDB [addressbook]> SELECT * FROM city;
+----------------+--------------+
| name           | city         |
+----------------+--------------+
| Иванов         | Мсква        |
| Петров         | Сочи         |
| Сидоров        | Дубна        |
+----------------+--------------+
3 rows in set (0.000 sec)

MariaDB [addressbook]>
```

Рис. 22: Наполнение таблицы

Проверка прав доступа для нового пользователя

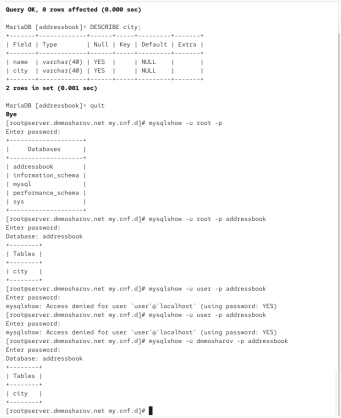

Рис. 23: Проверка прав доступа для нового пользователя

Бэкапы и сохранение vagrant

```
[root@server.dmmosharov.net my.cnf.d]# mkdir -p /var/backup
[root@server.dmmosharov.net my.cnf.d]# mysqldump -u root -p addressbook > /var/backup/add
ressbook.sql
Enter password:
[root@server.dmmosharov.net my.cnf.d]# mysqldump -u root -p addressbook | gzip > /var/bac
kup/addressbook.sql.gz
Enter password:
[root@server.dmmosharov.net my.cnf.d]# mysqldump -u root -p addressbook | gzip > $(date+/
var/backup/addressbook.%Y%m%d.%H%M%S.sql.gz)
-bash: date+/var/backup/addressbook.%Y%m%d.%H%M%S.sql.gz: No such file or directory
-bash: $(date+/var/backup/addressbook.%Y%m%d.%H%M%S.sql.gz): ambiguous redirect
Enter password:
mysqldump: Got errno 32 on write
[root@server.dmmosharov.net my.cnf.d]# mysql -u root -p addressbook < /var/backup/address
book.sql
Enter password:
[root@server.dmmosharov.net my.cnf.d]# zcat /var/backup/addressbook.sql.gz | mysql -u roo
t -p addressbook
Enter password:
[root@server.dmmosharov.net my.cnf.d]# cd /vagrant/provision/server
[root@server.dmmosharov.net server]# mkdir -p /vagrant/provision/server/mysql/etc/my.cnf.
d
[root@server.dmmosharov.net server]# mkdir -p /vagrant/provision/server/mysql/var/backup
[root@server.dmmosharov.net server]# cp -R /etc/my.cnf.d/utf8.cnf /vagrant/provision/serv
er/mysql/etc/my.cnf.d/
[root@server.dmmosharov.net server]# cp -R /var/backup/* /vagrant/provision/server/mysql/
var/backup/
[root@server.dmmosharov.net server]# cd /vagrant/provision/server
[root@server.dmmosharov.net server]# touch mysql.sh
[root@server.dmmosharov.net server]# chmod +x mysql.sh
[root@server.dmmosharov.net server]# nano mysql.sh
```

Рис. 24: Бэкапы и сохранение vagrant

mysql.sh

```
 GNU nano 8.1                                mysql.sh
cd /vagrant/provision/server
touch mysql.sh
chmod +x mysql.sh
Открыв его на редактирование, пропишите в нём следующий скрипт:
#!/bin/bash
echo "Provisioning script $0"
systemctl restart named
echo "Install needed packages"
dnf -y install mariadb mariadb-server
echo "Copy configuration files"
cp -R /vagrant/provision/server/mysql/etc/* /etc
mkdir -p /var/backup
cp -R /vagrant/provision/server/mysql/var/backup/* /var/backup
echo "Start mysql service"
systemctl enable mariadb
systemctl start mariadb
if [[ ! -d /var/lib/mysql/mysql ]]
then
echo "Securing mariadb"
mysql_secure_installation <<EOF
y
123456
123456
y
y
y
y
EOF
echo "Create database"
mysql -u root -p123456 <<EOF
CREATE DATABASE addressbook CHARACTER SET utf8 COLLATE utf8_general_ci;
EOF
mysql -u root -p123456 addressbook < /var/backup/addressbook.sql
fi
```

Рис. 25: mysql.sh

```
  server.vm.provision "server mysql",
                      type: "shell",
                      preserve_order: true,
                      path: "provision/server/mysql.sh"
end
```

Рис. 26: Vagrantfile

Выводы

В результате выполнения лабораторной работы были получены навыки по конфигурированию HTTP-сервера Apache и https