

技术栈：Apache、MySQL、PHP、HTTPS、Discuz

项目目标：

搭建高可用 LAMP 环境，支持动态 Web 应用。

部署 Discuz 论坛并实现 HTTPS 加密。

技术实现：

LAMP 环境配置：

Apache 2.4：配置虚拟主机，优化 MPM prefork 模块参数。

MySQL 5.7：创建数据库账户，设置权限隔离（GRANT 命令）。

PHP 7.2：安装 GD 库、MySQL 扩展，调整 php.ini 内存限制。

Discuz 部署：

下载源码包，解压至 Apache 根目录（/var/www/html）。

通过 Web 安装向导初始化数据库，配置管理员账号。

HTTPS 安全加固：

申请 Let's Encrypt 免费 SSL 证书，配置 Apache 强制跳转 HTTPS。

关键问题与解决：

问题 1：Discuz 安装时报“GD 库未启用”。

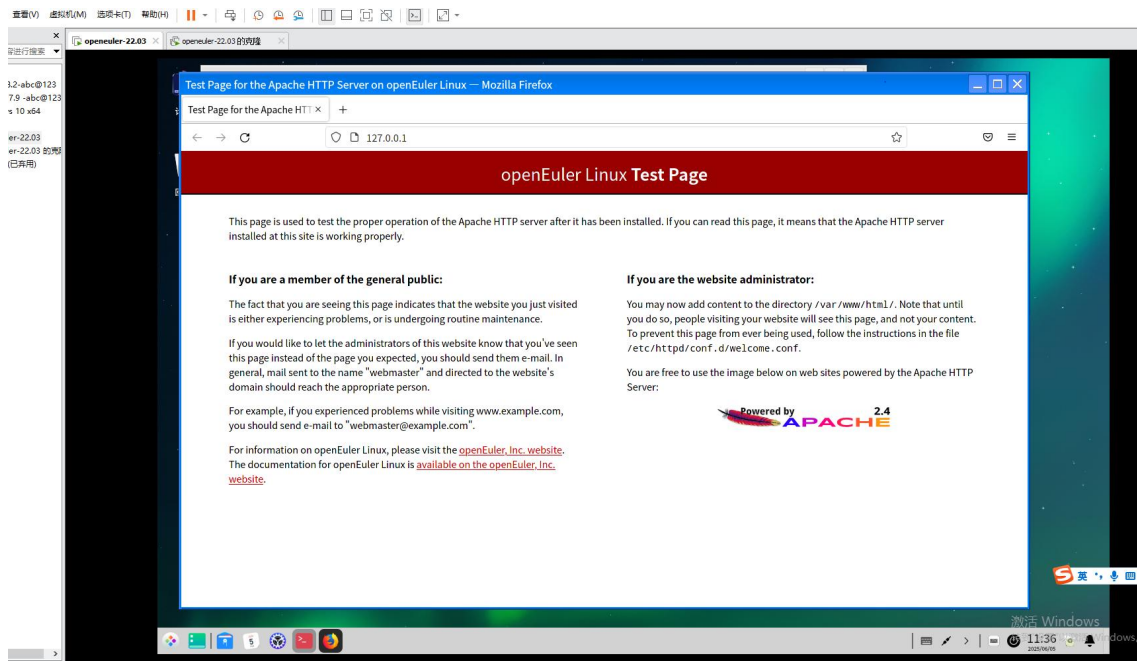
解决：执行 yum install php-gd，重启 Apache 服务。

问题 2：HTTPS 混合内容警告。

解决：修改 Discuz 配置文件 config_global.php，强制静态资源使用 HTTPS。

1. Apache 的配置

```
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5277:16: not a number
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5277:16: Expected a string.
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5282:16: not a number
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5282:16: Expected a string.
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5359:14: Expected a string.
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5362:16: not a number
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5362:16: Expected a string.
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5414:14: not a number
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5414:14: Expected a string.
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5417:68: Using one color stop
with linear-gradient() is deprecated.
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5647:74: Using one color stop
with linear-gradient() is deprecated.
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5657:62: Using one color stop
with linear-gradient() is deprecated.
(firefox:4777): Gtk-WARNING **: 11:36:02.457: Theme parsing error: gtk-dark.css:5661:73: Using one color stop
with linear-gradient() is deprecated.
Missing chrome or resource URL: resource://gre/modules/UpdateListener.jsm
Missing chrome or resource URL: resource://gre/modules/UpdateListener.sys.mjs
```



3. php 组件的配置

```
[root@23140542 ~]# extension=mysqli.so;
[root@23140542 ~]# extension=mysqlnd.so;
[root@23140542 ~]# php -m
[PHP Modules]
bz2
calendar
Core
ctype
curl
date
exif
fileinfo
filter
ftp
gettext
hash
iconv
json
libxml
mysqli
mysqlnd
openssl
pcntl
pcre
PDO
pdo_mysql
pdo_sqlite
Phar
readline
Reflection
session
sockets
SPL
sqlite3
```

```
[root@23140542 ~]# sudo yum install php-mysqlnd
Last metadata expiration check: 0:17:02 ago on 2025年06月05日 星期四 11时23分46秒.
Dependencies resolved.
=====
Package                        Architecture      Version           Repository
=====
Installing:
php-mysqlnd                    x86_64            8.0.30-9.oe2203sp3  update
Installing dependencies:
php-pdo                        x86_64            8.0.30-9.oe2203sp3  update
=====
Transaction Summary
=====
Install 2 Packages

Total download size: 199 k
Installed size: 647 k
Is this ok [y/N]: y
Downloading Packages:
(1/2): php-pdo-8.0.30-9.oe2203sp3.x86_64.rpm           321 kB/s | 69 kB    0
(2/2): php-mysqlnd-8.0.30-9.oe2203sp3.x86_64.rpm       505 kB/s | 130 kB   0
-----
Total                                                    604 kB/s | 199 kB   0
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :
  Installing     : php-pdo-8.0.30-9.oe2203sp3.x86_64
  Installing     : php-mysqlnd-8.0.30-9.oe2203sp3.x86_64
  Running scriptlet: php-mysqlnd-8.0.30-9.oe2203sp3.x86_64
  Verifying      : php-mysqlnd-8.0.30-9.oe2203sp3.x86_64
  Verifying      : php-pdo-8.0.30-9.oe2203sp3.x86_64

Installed:
php-mysqlnd-8.0.30-9.oe2203sp3.x86_64      php-pdo-8.0.30-9.oe2203sp3.x86_64

Complete!
```

4. MySQL/MariaDB 数据库的配置

```
[root@23140542 ~]# yum -y install mariadb-server
Last metadata expiration check: 0:15:45 ago on 2025年06月06日 星期五 10时47分57秒.
Package mariadb-server-1:10.5.29-1.oe2203sp3.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
```

```
policycoreutils-python-utils-3.3-8.oe2203sp3.noarch      python3-IPy-1.01-2.oe2203sp3.noarch
python3-audit-1:3.0.1-11.oe2203sp3.x86_64              python3-libselenium-3.3-5.oe2203sp3.x86_64
python3-libsemanage-3.3-5.oe2203sp3.x86_64              python3-policycoreutils-3.3-8.oe2203sp3.noarch
python3-setools-4.4.0-5.oe2203sp3.x86_64

Complete!
[root@23140542 Desktop]# systemctl start mariadb
[root@23140542 Desktop]# systemctl enable mariadb
Created symlink /etc/systemd/system/mysql.service → /usr/lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/mysqld.service → /usr/lib/systemd/system/mariadb.service.
Created symlink /etc/systemd/system/multi-user.target.wants/mariadb.service → /usr/lib/systemd/system/mariadb.service.
[root@23140542 Desktop]# mysql_secure_installation
```

```

complete!
[root@23140542 ~]# mysql_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:
Re-enter new password:
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

```

```

[root@23140542 ~]# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 26
Server version: 10.5.29-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)]> CREATE DATABASE hr;           # 创建名为hr的数据库
Query OK, 1 row affected (0.001 sec)

MariaDB [(none)]> USE hr;                       # 切换到hr数据库
Database changed
MariaDB [hr]>
MariaDB [hr]> -- 创建名为namelist的表
MariaDB [hr]> CREATE TABLE namelist (
  -> id INT(4) AUTO_INCREMENT NOT NULL PRIMARY KEY,
  -> name CHAR(10) NOT NULL,
  -> age INT(2),
  -> city CHAR(50),
  -> score FLOAT(3,2)
  -> );
Query OK, 0 rows affected (0.003 sec)

MariaDB [hr]> INSERT INTO hr.namelist VALUES(1,'lili',27,'guangzhou',9.5);
Query OK, 1 row affected (0.001 sec)

MariaDB [hr]> INSERT INTO hr.namelist VALUES(2,'amy',23,'shenzhen',8.55);
Query OK, 1 row affected (0.001 sec)

MariaDB [hr]> SELECT * FROM namelist;
+----+-----+-----+-----+-----+
| id | name | age | city | score |
+----+-----+-----+-----+
| 1 | lili | 27 | guangzhou | 9.50 |
| 2 | amy | 23 | shenzhen | 8.55 |
+----+-----+-----+-----+
2 rows in set (0.000 sec)

MariaDB [hr]> GRANT ALL ON hr.* TO 'jay'@'localhost' IDENTIFIED BY 'redhat123';
Query OK, 0 rows affected (0.002 sec)

MariaDB [hr]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.000 sec)

```



```

MariaDB [hr]> use hr;
Database changed
MariaDB [hr]> SHOW DATABASES;
+-----+
| Database |
+-----+
| hr       |
| information_schema |
| mysql    |
| performance_schema |
+-----+
4 rows in set (0.000 sec)

MariaDB [hr]> SELECT * FROM namelist;
+----+-----+-----+-----+-----+
| id | name | age | city   | score |
+----+-----+-----+-----+-----+
| 1  | lili | 27  | guangzhou | 9.50 |
| 2  | amy  | 23  | shenzhen  | 8.55 |
+----+-----+-----+-----+-----+
2 rows in set (0.000 sec)

MariaDB [hr]> QUIT;
Bye
[root@23140542 ~]#

```

7. 配置虚拟主机，读取数据内容

```

[root@23140542 ~]# vi /etc/httpd/conf.d/httpd-vhosts.conf
[root@23140542 ~]# mkdir -p /var/www/hrweb
[root@23140542 ~]# chown -R apache:apache /var/www/hrweb
[root@23140542 ~]# systemctl restart httpd
[root@23140542 ~]# vim /etc/hosts

```

创建网站目录（-p参数确保父目录存在）
设置目录权限（Apache默认用户组）
重启Apache服务

终端 <3>

```

root@23140542:~
<?php
phpinfo();
?>

```

终端 <3>

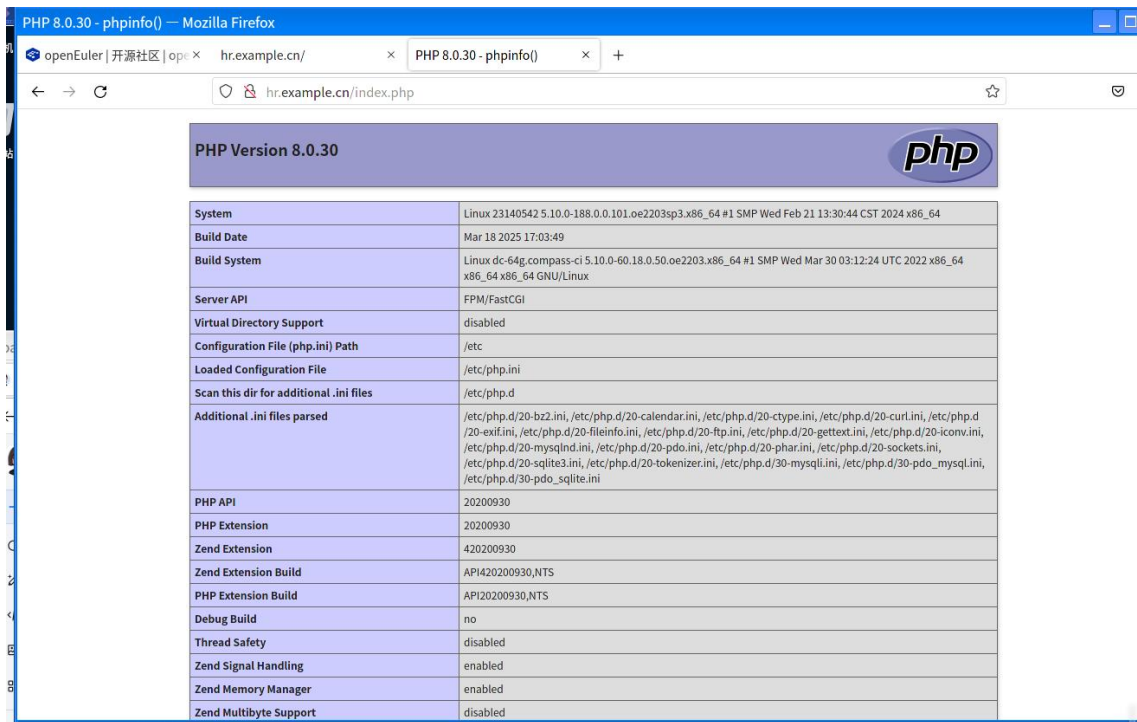
```

root@23140542:~
127.0.0.1    localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
172.16.8.204 hr.example.cn
172.16.8.204 ds.example.cn

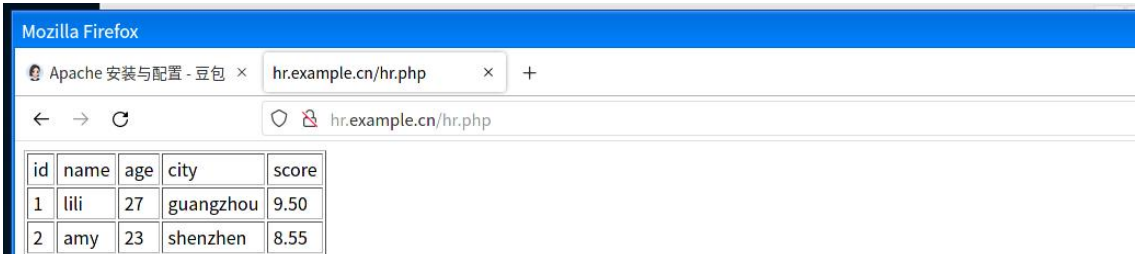
```

9. LAMP 测试

1)PHP 测试



2) 编写读取数据库的测试



3)

```

?php

$conn = mysqli_connect("localhost", "jay", "redhat123", "hr");

if (!$conn) {
    die("数据库连接失败: " . mysqli_connect_error());
}

mysqli_set_charset($conn, "utf8");

$result = mysqli_query($conn, "SELECT * FROM namelist");

if (!$result) {
    die("查询失败: " . mysqli_error($conn));
}

echo "<table border=1><tr>";

while ($field = mysqli_fetch_field($result)) {
    echo "<td>&nbsp;" . $field->name . "&nbsp;</td>";
}
echo "</tr>";

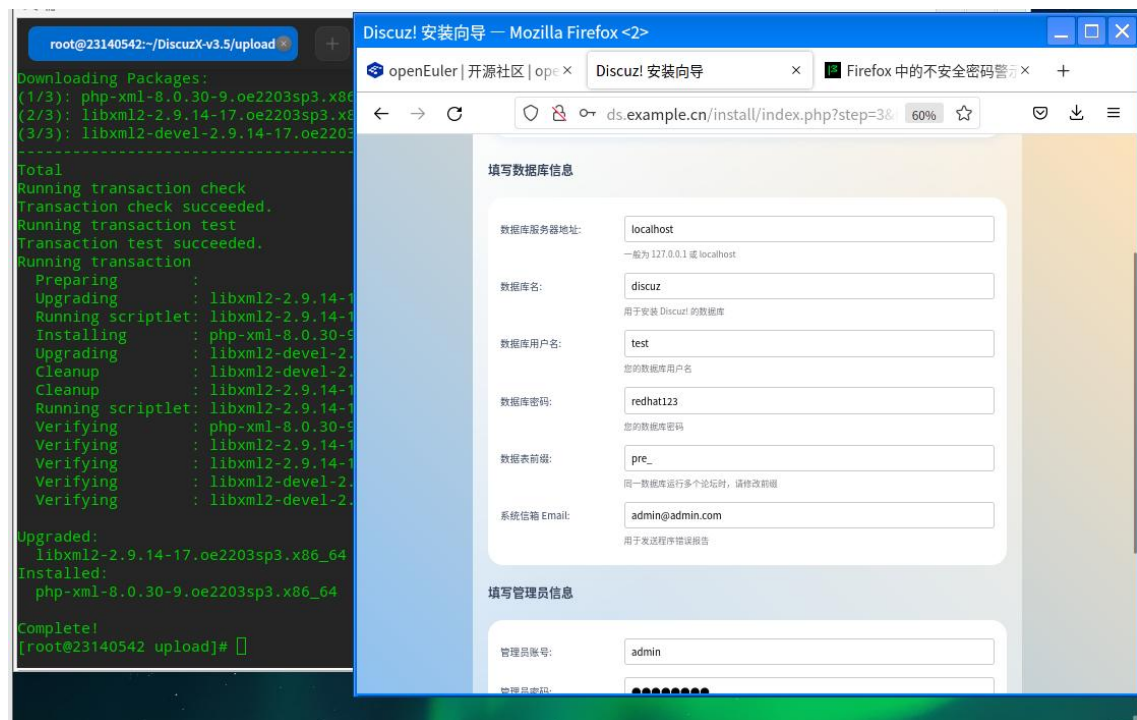
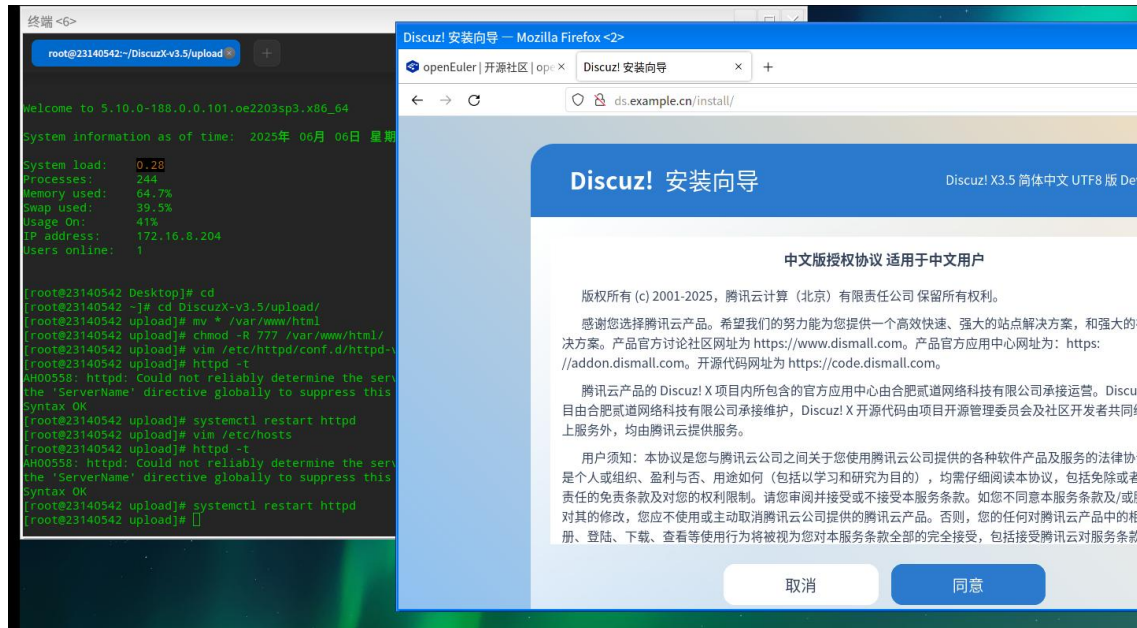
while ($rows = mysqli_fetch_row($result)) {
    echo "<tr>";
    foreach ($rows as $cell) {
        echo "<td>&nbsp;" . htmlspecialchars($cell) . "&nbsp;</td>";
    }
    echo "</tr>";
}
echo "</table>";

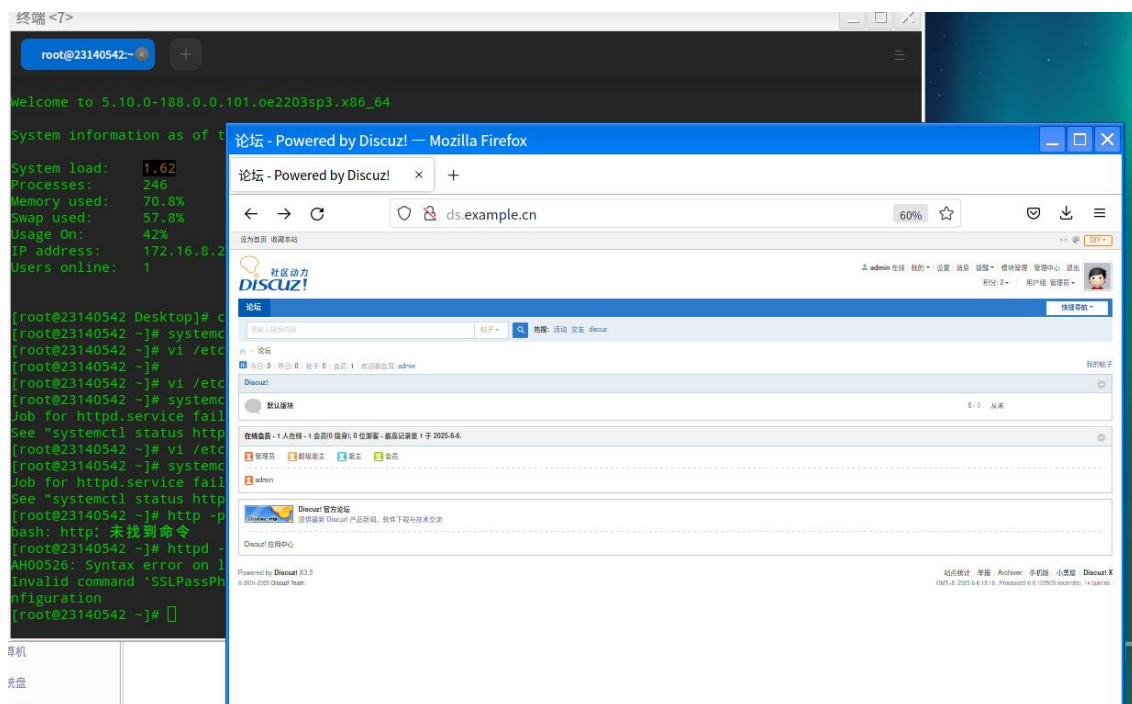
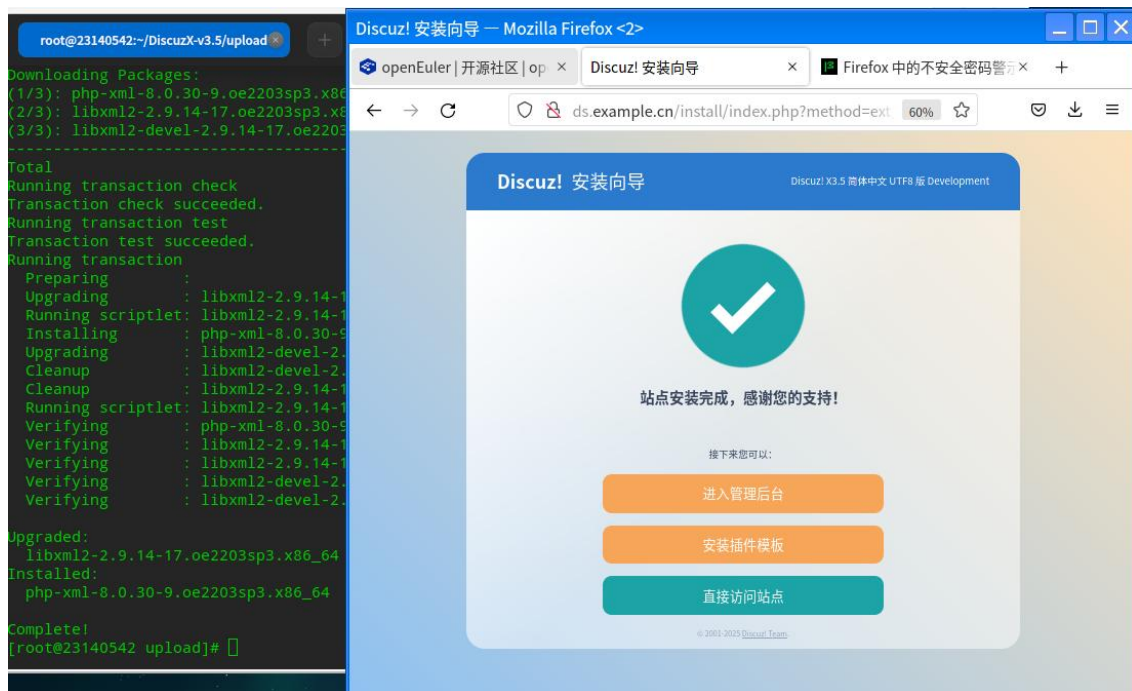
mysqli_free_result($result);
mysqli_close($conn);
?>

```

4)

1. Discuz 论坛网站的配置





让站点使用 https

