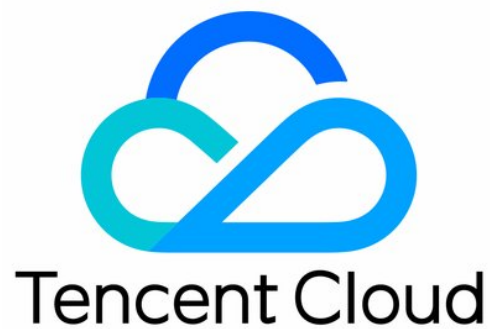


Cloud Virtual Machine

Best Practice

Product Introduction



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Best Practice

- Best Practices

- Build Discuz! Forum

- Build WordPress Website

- Network Performance Test

Best Practice

Best Practices

Last updated : 2018-06-22 16:39:29

This document is designed to help users maximize the security and reliability during the use of CVM.

Security and Network

- **Limited access:** Restrict access by using a firewall ([Security Group](#)) to only allow the trusted addresses to access instances, and set the most stringent rules in the Security Group. For example, to limit access via port/IP address.
- **Security level:** Different security group rules can be created for instance groups of different security levels to ensure that instances running important business cannot be accessed easily from the outside.
- **Network logical isolation:** Choose to use [VPC](#) to divide logical zones.
- **Account permission management:** When it is necessary to use multiple different accounts to control the same set of cloud resources, you can control their access to cloud resources using the [policy mechanism](#).
- **Secure login:** Log in to user's Linux instances by use of [SSH Key] ([/doc/product/213/6092](#)) whenever possible. For the instances that you [log in with password](#), the password needs to be changed from time to time.

Storage

- **Hardware storage:** For the data that requires high reliability, use Tencent Cloud's cloud disks to ensure the persistent storage and reliability of data. Try not to choose [Local Disk](#) for storage. For more information, please see [Cloud Block Storage Product Documentation](#).
- **Database:** For databases that are frequently accessed and variable in size, use [Tencent Cloud Database](#).

Backup and Recovery

- **Intra-region instance backup:** You can back up your instances and business data using **custom image** and **CBS snapshot**. For more information, please see [CBS Snapshot](#) and [Create Custom Image](#).
- **Cross-region instance backup:** You can copy and back up instances across regions using [Copy Image](#).
- **Blocking instance failures:** You can use [EIP](#) for domain name mapping to ensure that the server can quickly redirect the service IP to another CVM instance when it is unavailable, thereby blocking instance failures.

Monitoring and Alarm

- **Monitoring and responding events:** Periodically check monitoring data and set proper alarms. For more information, please see [Cloud Monitor Product Documentation](#).
- **Handling emergent requests:** With [Auto Scaling](#), the stability of CVMs during peak hours can be guaranteed and unhealthy instances can be replaced automatically.

Build Discuz! Forum

Last updated : 2018-09-28 11:51:38

Discuz!, with more than 2 million website users, is one of the world's most mature forum website software systems with the widest coverage. This tutorial takes Discuz! X3.2 as an example to show how to build a Discuz! forum website in LAMP (Linux + Apache + MySQL + PHP) environment.

Here, we provide two ways to build the Discuz! forum, and you can choose the appropriate one based on your needs:

- Use a Discuz! image for quick installation

This is recommended for users who build a Discuz! forum for the first time and are less familiar with relevant command operations.

- Self-install the LAMP environment and build a forum

This is recommended for users who are experienced in building forums and know how to work with relevant commands.

Linux: Linux system

Apache: One of the widely used Web server software for parsing Web applications

MySQL: A database management system

PHP: A program used to generate Web pages from a Web server

Installation via Image

The following services/tools are used in this tutorial:

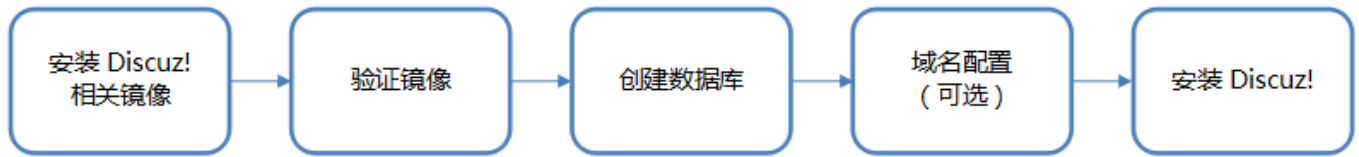
CVM: In this tutorial, we are going to create a CVM using the Tencent Cloud's Cloud Virtual Machine (CVM) to build a Discuz! Forum.

Domain name registration: To access your Discuz! forum with an easy-to-remember domain name, you can use Tencent Cloud's domain name registration service to purchase a domain name.

ICP licensing: Required for websites whose domain names are directed to Chinese servers. A website cannot be launched until an ICP license is obtained for its domain name. You can complete ICP licensing via Tencent Cloud.

Tencent Cloud DNS: You need to configure domain name resolution to allow users to access your website with a domain name instead of an IP address. You can resolve domain names through Tencent Cloud DNS service.

Following shows how to install a forum using an image:



Step 1: Install a Discuz! image

Install a Discuz! image according to the actual situation:

- Directly install an image if a Tencent Cloud CVM exists.
- Purchase a Tencent Cloud CVM.

Directly install an image if a Tencent Cloud CVM exists

1. Log in to the [CVM console](#), and click **Cloud Virtual Machine** on the left navigation bar to find the one used to build Discuz!.

Click **More** on the right menu and select **Reinstall the system**.

The screenshot shows the Tencent Cloud CVM console. On the left, the navigation bar has '云服务器' (Cloud Servers) selected, with sub-items like '概览' (Overview), '云主机' (Cloud Virtual Machine), '专用宿主机' (Dedicated Host), '镜像' (Image), and '云硬盘' (Cloud Disk). The main area is titled '云主机' (Cloud Virtual Machine) and shows a list of VMs. The first VM is 'ins-cvj7nf60 Discuz', which is in the '运行中' (Running) state. The '操作' (Actions) column for this VM has a red box around the '更多' (More) button.

ID/主机名	监控	状态	可用区	主机类型	配置	主IP地址	主机计费模式	操作
ins-cvj7nf60 Discuz		运行中	广州二区	标准型S1	1核 1GB 1Mbps 系统盘: 本地磁盘 网络: 基础网络	10.10.10.10 (内)	包年包月 2017-06-21到期	登录 续费 更多

2. Find a Discuz! image in **Website templates** of **Service market** to reinstall the system. This tutorial uses "Discuz! X3.2 official version (CentOS 7.2 64-bit Webmin | LAMP)". You can choose an image based on

your needs.

重装系统

镜像来源

当前镜像公共镜像自定义镜像共享镜像**服务市场**

镜像

基础环境全能环境管理与监控**建站模板**安全高可用Docker容器业务管理

Discuz! X3.2官方正式版 (CentOS 7.2 64位 Webmin | LAMP)

☒ 免费开通DDoS防护、WAF和云主机防护

[云安全介绍](#)

☒ 免费开通云产品监控、分析和实时告警

[云监控介绍](#)

系统盘

20GB (本地磁盘) [系统盘扩容介绍](#)

登录设置

密码SSH密钥

用户名

root

密码

应付费用

¥0 调整后的系统盘将随云主机一起到期，您须补齐相应的差价

注意：重装后，服务器系统盘内的所有数据将被清除，恢复到初始状态；服务器数据盘的数据不会丢失，但需要手动挂载才能使用，具体请参看[操作指引](#)

开始重装

取消

Purchase a CVM

1. Obtain a Discuz! image.

Log in to [Tencent Cloud](#), enter the [Cloud Market](#) from the top navigation bar on the home page, and

enter "Discuz" in the search box to get a free Discuz! image.

搜索

商 服务商入驻

上架时间 使用量 ↓ 联系我们: xinlanli@tencent.com



DiscuzX3.2论坛系统(CentOS6.5 64位 Nginx_PHP)

提供商: 济南流行网络科技有限公司

最新版本: 1.0.0 操作系统: CentOS ...

功能简介: 包含DiscuzX3.2稳定版和PHP运行环境, 已对环境进行优化大幅提高运行速度和稳定性。

优惠价: 免费

咨询·反馈



Discuz! X3.2官方正式版 (CentOS 7.2 64位 Webmin | LAMP)

提供商: 长沙网久软件有限公司

最新版本: 2.0.0 操作系统: CentOS ...

功能简介: "Discuz!是全球成熟度最高、覆盖率最大的论坛软件系统之一。自2001年6月面世以来, Discuz!已拥有15年以上的应用历史和200多万网站用户案例。目前, Discuz! 已经发展成为一个以社区为基础的专业建站平台, 让论坛 (BBS)、社交网络 (SNS)、门户 (Portal)、

优惠价: 免费

2. Purchase a CVM

You are required to purchase a CVM when purchasing an image. The configuration of the CVM depends

on the visits to your website. For more information, please see [How to create a Linux CVM](#).

The screenshot shows the '云服务器 CVM' (Cloud Virtual Machine) configuration page. It includes a navigation bar with '腾讯云' and '选购其他云产品'. The main content area has tabs for '快速配置' and '自定义配置'. A yellow banner at the top states: '云服务器单价最高直降8.7%，包年包月预付费6个月及以上88折，1年83折，2年7折，3年5折（注：金融专区不参加此活动）'.

The configuration steps are: 1. 选择地域与机型, 2. 选择镜像, 3. 选择存储与网络, 4. 设置信息.

Under '1. 选择地域与机型', the '计费模式' (Billing Mode) is set to '包年包月' (Prepaid). The '地域' (Region) is '广州' (Guangzhou), and the '可用区' (Availability Zone) is '广州二区' (Guangzhou Zone 2). The '系列' (Series) is '系列2' (Series 2). A '下一步：选择镜像' (Next Step: Select Image) button is at the bottom.

3. Create a CVM

After the purchase, you can create a new CVM on the console. Once created, the CVM is running automatically. Please wait 2-3 minutes before proceeding to step 2.

The screenshot shows the '云服务器' (Cloud Virtual Machine) list in the Tencent Cloud console. The left sidebar has '云服务器' and '云主机' (Cloud Virtual Machine) selected. The main area shows a table of instances.

ID/主机名	监控	状态	可用区	主机类型	配置	主IP地址	主机计费模式	操作
ins-cv7nf60 u672au...		运行中	广州二区	标准型S1	1核 1GB 1Mbps 系统盘：本地磁盘 网络：基础网络	10.10.10.10 (内)	包年包月 2017-06-21到期	登录 续费 更多

Note: The public IP of the CVM will be used in the following steps. Be sure to copy and save it.

Step 2: Verify Discuz! image

You need to verify the image so as to work with it properly. After the image is installed successfully, wait for about 3 minutes before using a browser to open the URL `http://CVM's public IP`. The following page appears in case of a successful access:



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基础环境请了解：

- ★ 必读：[基础环境帮助文档](#)，数据库密码参考该文档。
- ★ 必用：[MySQL管理](#) [服务器探针](#) [phpinfo](#) [Opcache](#)
- ★ 参考：[智能客服（推荐）](#) [常见问题](#) [人工服务指引](#)



Webmin面板工具：Webmin是目前功能最强大的基于Web的Linux系统管理工具。管理员通过浏览器访问Webmin的各种管理功能并完成相应的管理动作。常见功能参考[webmin帮助文档](#)。

访问地址(管理员/密码：[admin/admin](#))是<http://公网IP:10000>



Discuz!

Discuz! 的基础架构采用世界上最流行的web编程组合PHP+MySQL实现，是一个经过完善设计，适用于各种服务器环境的高效论坛系统解决方案。

[请参考安装配置discuz文档](#)，进行安装配置

说明：1、安装应用软件时建议先设置域名，再通过域名打开软件安装，如果先安装软件后设置域名可能造成域名访问软件时部分功能失效。
2、如果不需要websoft9提供的这个首页，请根据镜像帮助文档找到网站根目录，删除或者改名根目录中的index.html即可。
3、0元镜像无人工支持服务，常见操作请根据镜像文档、智能客服或百度搜索自助完成，如需人工服务请了解[人工服务指引](#)。

If the above page does not appear after a long time, please follow the suggestions below for troubleshooting:

- Restart the CVM and try again.
- Ping the public IP of the CVM to check whether the network connection is available.
- Reinstall the system as instructed in step 1.
- Check the CVM's [security group configuration](#) to confirm whether the default HTTP port is disabled.

We have never come across a situation where the initialization page cannot be opened when the above methods are tried out.

Step 3: (Optional) Configure a domain name

You can set a domain name for your Discuz! forum website, allowing users to access your website with an easy-to-remember domain name instead of a complicated IP address. Users who build forums for learning can only use an IP to install the software directly for temporary use, which is not recommended.

In this case, skip this step and proceed directly to step 4.

If you already have a domain name or want to access your forum via a domain name, refer to the steps below.

1. [Purchase a domain name](#) via Tencent Cloud. For more information on domain name registration, please see [How to register a domain name](#).
2. Obtain an [ICP license](#).

This is required for websites whose domain names are directed to Chinese servers. A website cannot be launched until an ICP license is obtained for its domain name. You can obtain an ICP license via Tencent Cloud free of charge. It generally takes 20 days to complete audit.

3. Configure domain name resolution through Tencent Cloud [DNS](#).

3.1 Log in to the [DNS console](#), select a domain name or add an existing domain name.

3.2 Click **Resolve** to enter the domain name's record management page.



3.3 Click **Add** to add a record to be resolved.

The screenshot shows the '添加记录' (Add Record) dialog box. It contains the following fields:

- 记录类型 (Record Type): A dropdown menu with 'A' selected.
- 主机记录 (Host Record): A text input field with the placeholder '填写子域名 (如www), 不填写默认保存为@'.
- 线路类型 (Line Type): A dropdown menu with '默认' (Default) selected.
- 关联云资源 (Associated Cloud Resource): Radio buttons for '是' (Yes) and '否' (No), with '否' selected.
- 记录值 (Record Value): A text input field with the placeholder '云主机的公网 IP'.
- TTL: A dropdown menu with '10分钟' (10 minutes) selected.

At the bottom right, there are two buttons: '确定' (Confirm) and '取消' (Cancel). A link '解析设置指引' (Resolution Settings Guide) is located at the top right of the dialog.

Step 4: Install and configure Discuz!

1. Access the domain name configured in step 3 through a browser, click Discuz! - **Install and Configure** to enter the installation page.



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**基础环境请了解：**

- ★ 必读：[基础环境帮助文档](#)，数据库密码参考该文档。
- ★ 必用：[MySQL管理](#) [服务器探针](#) [phpinfo](#) [Opcache](#)
- ★ 参考：[智能客服（推荐）](#) [常见问题](#) [人工服务指引](#)

**Webmin面板工具：**Webmin是目前功能最强大的基于Web的Linux系统管理工具。管理员通过浏览器访问Webmin的各种管理功能并完成相应的管理动作。常见功能参考[webmin帮助文档](#)。
访问地址(管理员/密码：[admin/admin](#))是[http://公网IP:10000](#)

**Discuz!**
Discuz! 的基础架构采用世界上最流行的web编程组合PHP+MySQL实现，是一个经过完善设计，适用于各种服务器环境的高效论坛系统解决方案。
请参考[安装配置discuz文档](#)，进行[安装配置](#)

说明：1. 安装应用软件时建议先设置域名，再通过域名打开软件安装，如果先安装软件后设置域名可能造成域名访问软件时部分功能失效。
2. 如果不需要websoft9提供的这个首页，请根据镜像帮助文档找到网站根目录，删除或重改根目录中的index.html即可。
3. 0元镜像无人工支持服务，常见操作请根据镜像文档、智能客服或百度搜索自助完成，如需人工服务请了解[人工服务指引](#)。

2. Click **Agree** to go to the installation step 1: check installation environment.

Discuz!

安装向导

Discuz!X3.2 简体中文 UTF8 版 20151208

中文版授权协议 适用于中文用户

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我同意

我不同意

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3. Upon confirmation of the current status, click **Next Step** to set running environment.

Discuz!

安装向导

Discuz!X3.2 简体中文 UTF8 版 20151208

1.

开始安装

环境以及文件目录权限检查

检查安装环境

设置运行环境

创建数据库

安装

环境检查

项目	Discuz! 所需配置	Discuz! 最佳	当前服务器
操作系统	不限制	类Unix	✓ Linux
PHP 版本	5.1	5.3	✓ 5.6.28
附件上传	不限制	2M	✓ 50M
GD 库	1.0	2.0	✓ bundled (2.1.0 compatible)
磁盘空间	10M	不限制	✓ 13422M

目录、文件权限检查

目录文件	所需状态	当前状态
./config/config_global.php	✓ 可写	✓ 可写

4. Select clean install, and click **Next Step** to create database.



5. Create a database for Discuz!, and use default MySQL account and password (root/123456) of the image to connect to the database. Set a system email as well as admin account, password and email. Click **Next Step** to start installation.

Note: Remember your admin account and password.

Discuz!

安装向导

Discuz!X3.2 简体中文 UTF8 版 20151208

3.

安装数据库

正在执行数据库安装

检查安装环境

设置运行环境

创建数据库

安装

填写数据库信息

数据库服务器:

localhost

数据库服务器地址, 一般为 localhost

数据库名:

Discuz

数据库用户名:

root

数据库密码:

123456

数据表前缀:

pre_

同一数据库运行多个论坛时, 请修改前缀

系统信箱 Email:

admin@admin.com

用于发送程序错误报告

填写管理员信息

管理员账号:

admin

管理员密码:

.....

管理员密码不能为空

重复密码:

.....

管理员 Email:

admin@admin.com

下一步

6. After the installation is completed, click **Your forum has been installed successfully. Click here to access.** to access your forum.

Discuz! 安装向导

Discuz!X3.2 简体中文 UTF8 版 20151208

Discuz! 应用中心
应用中心特意为您准备了一批优秀应用，插件、模板应有尽有，无限制扩充站点功能，建站必备。
快来应用中心装个应用吧！



品牌商家+寻宝商城+拼团+求职招聘+房产系统+拼车



拼团 砍价 交友
助力 抽奖 投票

全民抢红包
看广告 找口令 领红包



西瓜手机应用
50多款 任你挑



SUP BBS
安装: 19 ★★★★★



今日头条自动采集
安装: 155 ★★★★★



百变小米每日签到
安装: 5.8万 ★★★★★



小说阅读器
安装: 2,256 ★★★★★



【同盾】论坛防灌水
安装: 1.1万 ★★★★★



【亮剑】品牌商家
安装: 2万 ★★★★★



克米设计-APP手机
★★★★★



APP!手机模板
★★★★★



威兔手机模板
★★★★★



语滴城市门户12
★★★★★

您的论坛已完成安装，点此访问

For more information on Discuz! Installation, please watch the video at the bottom. (For reference only. Refer to actual operations)

For more information, please see [Discuz! image installation guide](#).

Self-installation

The following services/tools are used in this tutorial:

CVM: In this tutorial, we are going to create a CVM using the Tencent Cloud's Cloud Virtual Machine (CVM)

to build a Discuz! forum.

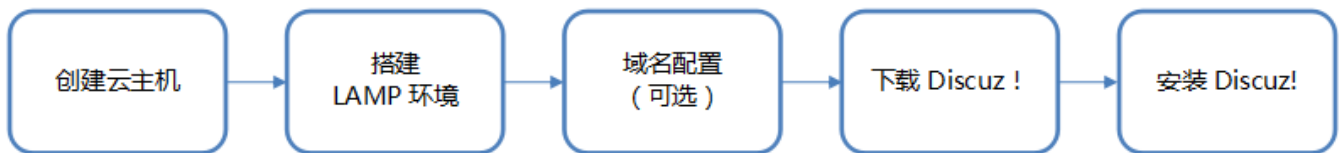
Domain name registration: To access your Discuz! forum with an easy-to-remember domain name, you can use Tencent Cloud's domain name registration service to purchase a domain name.

ICP licensing: Required for websites whose domain names are directed to Chinese servers. A website cannot be launched until an ICP license is obtained for its domain name. You can complete ICP licensing via Tencent Cloud.

Tencent Cloud DNS: You need to configure domain name resolution to allow users to access your website with a domain name instead of an IP address. You can resolve domain names through Tencent Cloud DNS service.

PuTTY: One of the free tools ideal for remote login. This easy-to-operate software is used in this tutorial for forum building. [Download PuTTY](#).

Following shows how to self-install a forum:



Step 1: Create a CVM

1. [Purchase a CVM](#) based on your needs. For more information on how to purchase a CVM, please see [Create Linux CVMs](#).
2. After the CVM is created, you can log in to the [Tencent Cloud console](#) to view or edit its status.

ID/主机名	监控	状态	可用区	主机类型	配置	主IP地址	主机计费模式	操作
ins-cvj7nf60 u672au5...		运行中	广州二区	标准型S1	1核 1GB 1Mbps 系统盘: 本地磁盘 网络: 基础网络	10.10.10.10 (内网)	包年包月 2017-06-21到期	登录 续费 更多

The operating system version of the CVM in this tutorial is CentOS 6.8. Save the following information to be used in the subsequent steps:

- CVM's user name and password

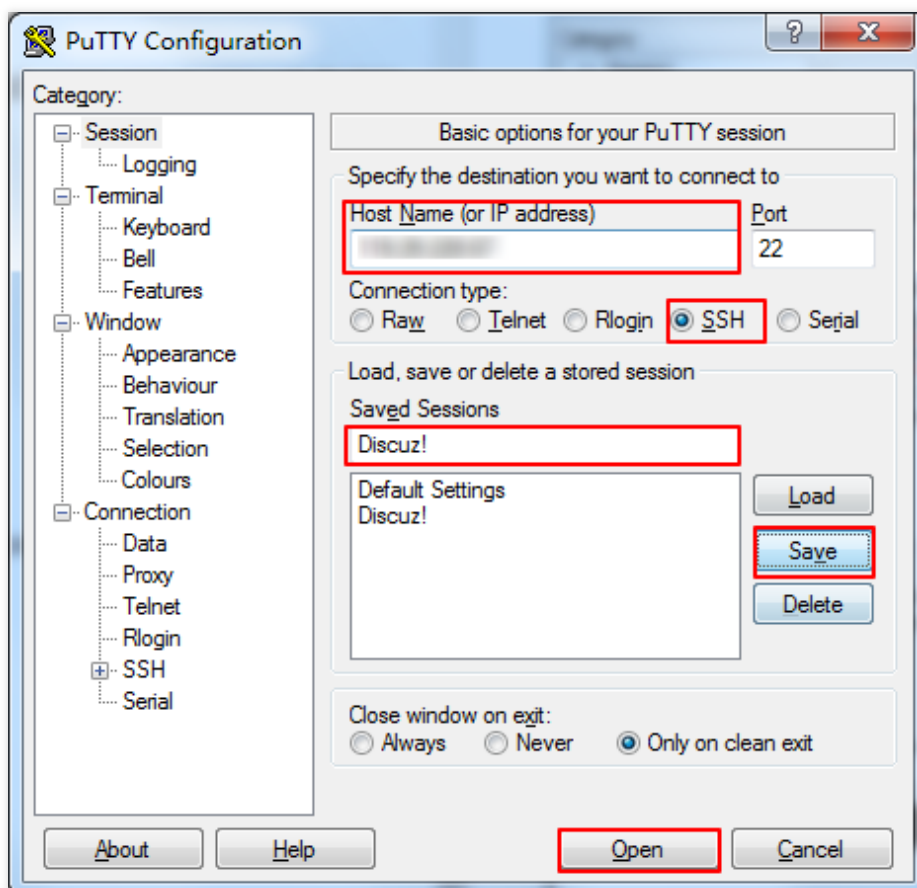
- CVM's public IP

Step 2: Build LAMP environment

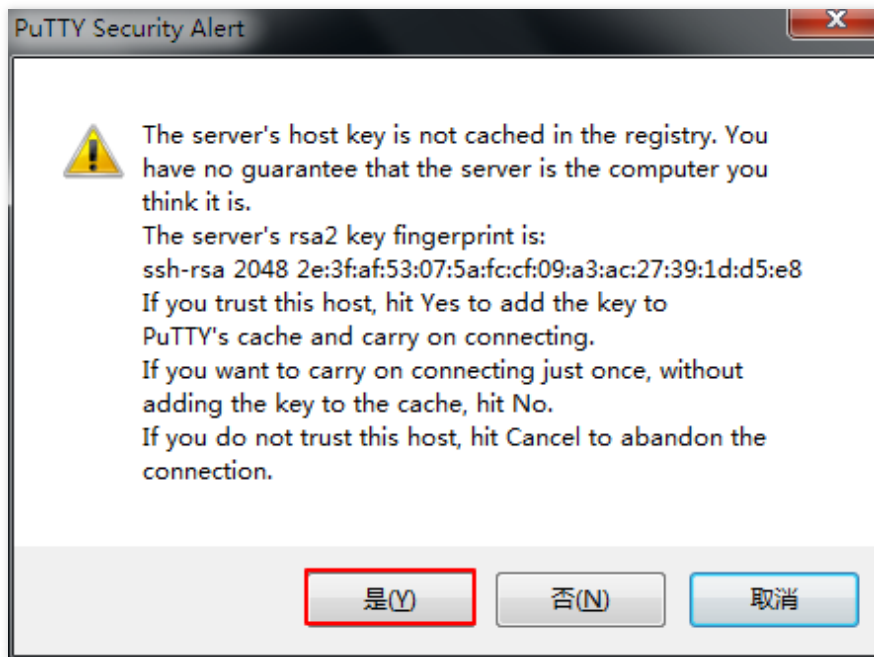
For CentOS system, Tencent Cloud provides a software installation source synced with the CentOS official version, containing the most recent and stable version of software, which can be quickly installed directly through Yum.

2.1 Run PuTTY to connect to Linux CVM

1. [Download PuTTY](#) to your computer, decompress the file, and then double-click "putty.exe" to open the configuration page as follows:
2. Select "Session", and enter the name or IP of the CVM to be accessed in "Host Name (or IP address)", such as "server1" or "192.168.2.10". In this tutorial, the CVM's public IP is used. Leave other configuration options unchanged.
3. Specify a name for the session in "Saved Sessions" field, and click "Save" to save the session configuration.



4. After the configuration is completed, click "Open", and a prompt window appears for certificate confirmation. Select "Yes".



5. In the pop-up login interface, enter the CVM's user name and password to connect to the CVM for the subsequent operations.

```
login as: root
root@  's password:
[root@VM_75_96_centos ~]#
```

2.2 Install necessary software

1. After logging in to the CVM using PuTTY, you are granted the root permission by default. You can enter relevant commands in PuTTY. Enter the following command to install necessary software all at once (Apache, MySQL, PHP):

```
yum install httpd php php-fpm php-mysql mysql mysql-server -y
```

When the installation is completed, "Complete!" will show in the PuTTY window. You can use the scroll bar to view the current installer package version:

```
Installed:
  httpd.x86_64 0:2.2.15-59.el6.centos      mysql.x86_64 0:5.1.73-8.el6_8
  mysql-server.x86_64 0:5.1.73-8.el6_8    php.x86_64 0:5.3.3-49.el6
  php-fpm.x86_64 0:5.3.3-49.el6          php-mysql.x86_64 0:5.3.3-49.el6

Dependency Installed:
  apr.x86_64 0:1.3.9-5.el6_2
  apr-util.x86_64 0:1.3.9-3.el6_0.1
  apr-util-ldap.x86_64 0:1.3.9-3.el6_0.1
  httpd-tools.x86_64 0:2.2.15-59.el6.centos
  mailcap.noarch 0:2.1.31-2.el6
  perl-DBD-MySQL.x86_64 0:4.013-3.el6
  perl-DBI.x86_64 0:1.609-4.el6
  php-cli.x86_64 0:5.3.3-49.el6
  php-common.x86_64 0:5.3.3-49.el6
  php-pdo.x86_64 0:5.3.3-49.el6

Dependency Updated:
  mysql-libs.x86_64 0:5.1.73-8.el6_8

Complete!
```

The versions of software in the installer package are as follows:

Apache: 2.2.15

MySQL: 5.1.73

PHP: 5.33

2. Launch the service

```
service httpd start
service mysqld start
service php-fpm start
```

3. Configure MySQL database

We need to create a database and a user to store data for the Discuz! program. The database service has been launched in the previous step, and here we need to set a root password for MySQL to allow users to access it.

```
mysqladmin -u root password "XXXXXXXX" ((the password is customizable))
```

After setting the MySQL password, verify the account password.

```
mysql -u root -p
```

If you can log in to the MySQL using the password you just set, the configuration is correct. Exit the MySQL:

```
exit
```

```
[root@VM_75_96_centos ~]# mysqladmin -u root password "qcloud"
[root@VM_75_96_centos ~]# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 3
Server version: 5.1.73 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

2.3 Verify environment configuration

Generally, by this point, the environment has been successfully configured. In this step, we need to verify and ensure the success of environment build.

1. Use the following command to create a test file `test.php` in the default root directory `"/var/www/html"` of Apache:

```
vim /var/www/html/test.php
```

2. Press "I" key or "Insert" key to switch to the edit mode and enter the following code:

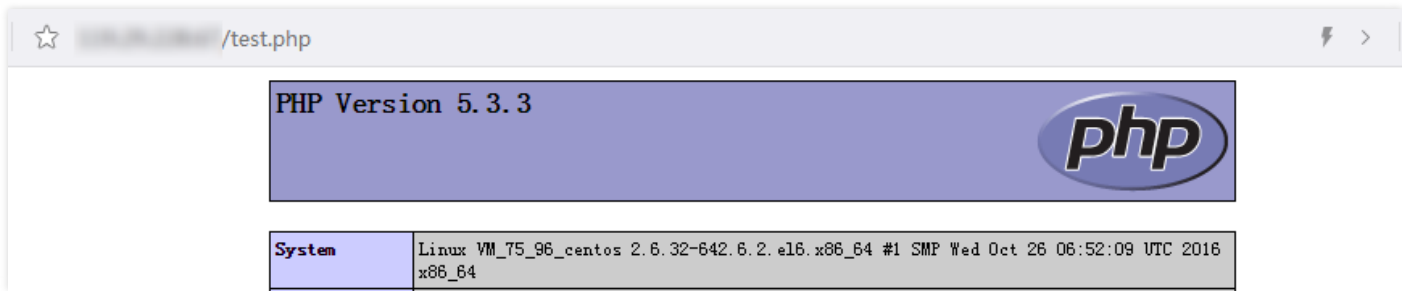
```
<?php
echo "<title>Test Page</title>";
phpinfo()
?>
```

Then, press "Esc", enter ":wq", save the file and return.

3. Access the file `test.php` via a browser to check whether the environment configuration has been completed successfully:

```
http://CVM's public IP/test.php
```

The appearance of the following page indicates the successful configuration of LAMP environment.



Step 3: (Optional) Configure a domain name

You can set a domain name for your Discuz! forum website, allowing users to access your website with an easy-to-remember domain name instead of a complicated IP address. Users who build forums for learning can only use an IP to install the software directly for temporary use, which is not recommended.

In this case, skip this step and proceed directly to step 4.

If you already have a domain name or want to access your forum via a domain name, refer to the steps below.

1. [Purchase a domain name](#) via Tencent Cloud. For more information on domain name registration, please see [How to register a domain name](#).
2. Obtain an [ICP license](#).
This is required for websites whose domain names are directed to Chinese servers. A website cannot be launched until an ICP license is obtained for its domain name. You can obtain an ICP license via Tencent Cloud free of charge. It generally takes 20 days to complete audit.
3. Configure domain name resolution through Tencent Cloud [DNS](#).
 - 3.1 Log in to the [DNS console](#), select a domain name or add an existing domain name.
 - 3.2 Click **Resolve** to enter the domain name's record management page.



3.3 Click **Add** to add a record to be resolved.

添加记录

记录类型

A

主机记录

填写子域名（如www），不填写默认保存为@

线路类型

默认

关联云资源

☐ 是 ☒ 否

记录值

云主机的公网 IP

TTL

10分钟

确定

取消

[解析设置指引](#)

Step 4: Install Discuz!

4.1 Download Discuz!

1. If the Discuz! installer package is not built in Tencent Cloud, download it from [Discuz! official website](#).

```
wget http://download.comsenz.com/DiscuzX/3.2/Discuz_X3.2_SC_UTF8.zip
```

2. Decompress the installer package.

```
unzip Discuz_X3.2_SC_UTF8.zip
```

4.2 Preparations for installation

1. Copy all files under the decompressed folder "upload" to "/var/www/html/".

```
cp -r upload/* /var/www/html/
```

2. Grant write permission to other users. After these directory files are uploaded to the server, only root users have the write permission by default.

```
chmod -R 777 /var/www/html
```

4.3 Install Discuz!

Now, the forum has been completely built and can be installed in the browser.

1. By entering the domain name or IP address (CVM's public IP) of the Discuz! site configured in step 3 in the Web browser's address bar, you can see the Discuz! installation interface. Click **Agree** to go to the installation step 1: check installation environment.

 安装向导

Discuz!X3.2 简体中文 UTF8 版 20151208

中文版授权协议 适用于中文用户

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用户须知：本协议是您与康盛公司之间关于您使用康盛公司提供的各种软件产品及服务的法律协议。无论您是个人或组织、盈利与否、用途如何（包括以学习和研究为目的），均需仔细阅读本协议，包括免除或者限制康盛责任的免责条款及对您的权利限制。请您审阅并接受或不接受本服务条款。如您不同意本服务条款及/或康盛随时对其的修改，您应不使用或主动取消康盛公司提供的康盛产品。否则，您的任何对康盛产品中的相关服务的注册、登陆、下载、查看等使用行为将被视为您对本服务条款全部的完全接受，包括接受康盛对服务条款随时所做的任何修改。

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我同意

我不同意

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2. Upon confirmation of the current status, click **Next Step** to set running environment.

Discuz!

安装向导

Discuz!X3.2 简体中文 UTF8 版 20151208

1.

开始安装

环境以及文件目录权限检查

检查安装环境

设置运行环境

创建数据库

安装

环境检查

项目	Discuz! 所需配置	Discuz! 最佳	当前服务器
操作系统	不限制	类Unix	✓ Linux
PHP 版本	5.1	5.3	✓ 5.6.28
附件上传	不限制	2M	✓ 50M
GD 库	1.0	2.0	✓ bundled (2.1.0 compatible)
磁盘空间	10M	不限制	✓ 13422M

目录、文件权限检查

目录文件	所需状态	当前状态
./config/config_global.php	✓ 可写	✓ 可写

3. Select clean install, and click **Next Step** to create database.



4. Create a database for Discuz!, and use the root account and password set in step 2.2 to connect to the database. Set a system email as well as admin account, password and email. Click **Next Step** to start installation.

Note: Remember your admin account and password.

Discuz!

安装向导

Discuz!X3.2 简体中文 UTF8 版 20151208

3.

安装数据库

正在执行数据库安装

检查安装环境

设置运行环境

创建数据库

安装

填写数据库信息

数据库服务器:

localhost

数据库服务器地址, 一般为 localhost

数据库名:

Discuz

数据库用户名:

root

数据库密码:

123456

数据表前缀:

pre_

同一数据库运行多个论坛时, 请修改前缀

系统信箱 Email:

admin@admin.com

用于发送程序错误报告

填写管理员信息

管理员账号:

admin

管理员密码:

.....

管理员密码不能为空

重复密码:

.....

管理员 Email:

admin@admin.com

下一步

5. After the installation is completed, click **Your forum has been installed successfully. Click here to access.** to access your forum.

Discuz! 安装向导

Discuz!X3.2 简体中文 UTF8 版 20151208

Discuz! 应用中心

应用中心特意为您准备了一批优秀应用，插件、模板应有尽有，无限制扩充站点功能，建站必备。

快来应用中心装个应用吧！



品牌商家+寻宝商城+拼团+求职招聘+房产系统+拼车



拼团 砍价 交友
助力 抽奖 投票

全民抢红包
看广告 找口令 领红包



西瓜手机应用
50多款 任你挑



SUP BBS
安装: 19 ★★★★★



头条 今日头条自动采集
安装: 155 ★★★★★



小米 百变小米每日签到
安装: 5.8万 ★★★★★



小说阅读器
安装: 2,256 ★★★★★



【同盾】论坛防灌水
安装: 1.1万 ★★★★★



【亮剑】品牌商家
安装: 2万 ★★★★★



克米设计 APP手机版
让您的手机与众不同

克米设计-APP手机
★★★★★



APP!手机模板
+ 完善的模板
+ 精美UI
+ APP3.0

APP!手机模板
★★★★★



威兔手机模板
★★★★★



语滴城市门户12
★★★★★

您的论坛已完成安装，点此访问

Watch video:



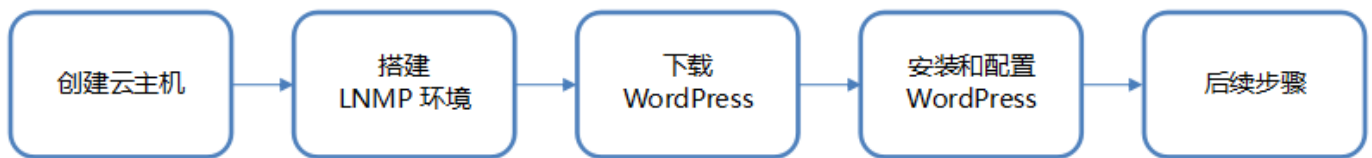
Build WordPress Website

Last updated : 2018-10-09 15:09:02

WordPress is a common software for building personal blog websites, which is developed using PHP language and MySQL database. You can use Tencent Cloud CVM to run WordPress and publish your personal blogs through simple operations.

Tencent Cloud Lab provides tutorials for practical operations, to help you build LNMP environment and WordPress website step by step. Click to enter the [Lab](#). For more information on how to build a WordPress website, please see [Build WordPress Personal Blog Based on CentOS](#).

Here, we take CentOS Linux 6.8 as an example to show how to build a WordPress personal website:



Introduction

The following services/tools are used in this tutorial:

CVM: This tutorial uses Tencent Cloud's Cloud Virtual Machine (CVM) to build a WordPress website.

Domain name registration: To access your WordPress website with an easy-to-remember domain name, you can use Tencent Cloud's domain name registration service to purchase a domain name.

ICP licensing: Required for websites whose domain names are directed to Chinese servers. A website cannot be launched until an ICP license is obtained for its domain name. You can complete ICP licensing via Tencent Cloud.

Tencent Cloud DNS: You need to configure domain name resolution to allow users to access your website with a domain name instead of an IP address. You can resolve domain names through Tencent Cloud DNS service.

PuTTY: One of the free tools ideal for remote login. This easy-to-operate software is used in this tutorial for forum building. [Download PuTTY](#).

Step 1: Create and run a CVM

1. Purchase a CVM based on your needs.

For more information on how to create a CVM, please see:

[Create Linux CVMs](#)

2. After the CVM is created, you can log in to the [Tencent Cloud console](#) to view or edit its status.



The operating system version of the CVM in this tutorial is CentOS 6.8. Save the following information to be used in the subsequent steps:

- CVM's user name and password
- CVM's public IP

Step 2: Build LNMP environment

LNMP, an acronym for Linux, Nginx, MySQL and PHP, is one of the most common runtime environments in which Web servers can run. After the CVM is created, you can build the LNMP environment.

Linux: CentOS 6.8

Nginx: Web server program for parsing Web applications

MySQL: A database management system

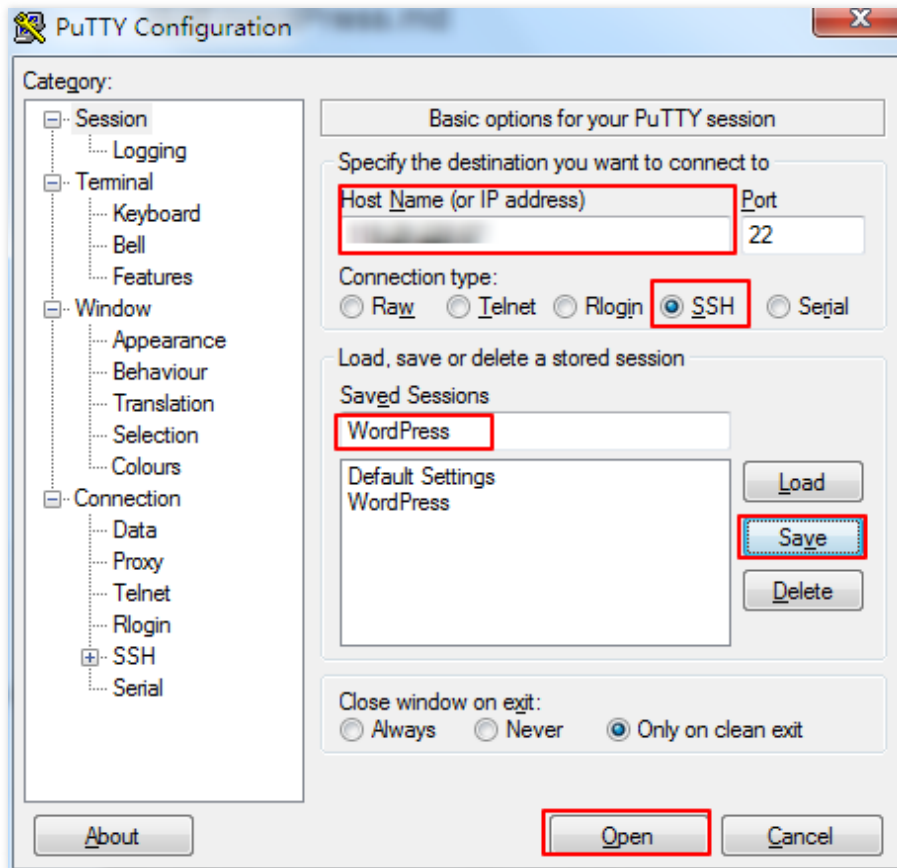
PHP: A program used to generate Web pages from a Web server

Tencent Cloud provides Yum download source. You can quickly install software through Yum in CentOS.

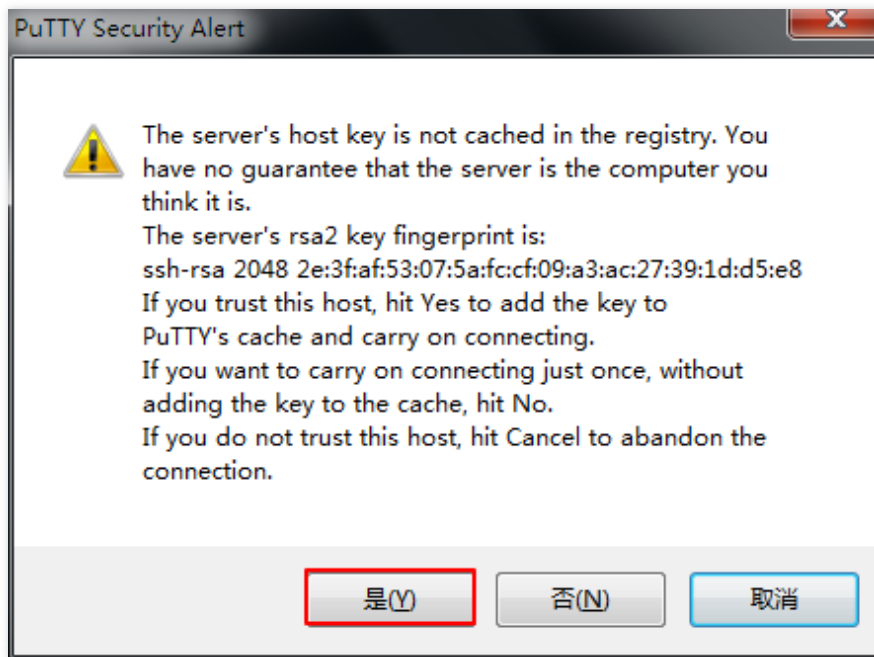
Yum, Vim and PuTTY commands will be used in the building process.

2.1 Run PuTTY to connect to Linux CVM

1. [Download PuTTY](#) to your computer, open the folder to which it is downloaded, decompress the file, and then double-click "putty.exe" to open the configuration page as follows:
2. Select "Session", and enter the name or IP of the CVM to be accessed in "Host Name (or IP address)", such as "server1" or "192.168.2.10". In this tutorial, the CVM's public IP is used. Leave other configuration options unchanged.
3. Specify a name for the session in "Saved Sessions" field, and click "Save" to save the session configuration.



4. After the configuration is completed, click "Open", and a prompt window appears for certificate confirmation. Select "Yes".



In the pop-up login interface, enter the CVM's user name and password to connect to the CVM for the subsequent operations.

```
login as: root
root@  's password:
[root@VM_75_96_centos ~]#
```

2.2 Install necessary software using Yum

1. After logging in to the CVM, you are granted the root permission by default. With the root permission, you can install necessary software all at once (Nginx, MySQL, PHP) by using the following command:

```
yum install nginx php php-fpm php-mysql mysql-server -y
```

When the installation is completed, "Complete!" will show in the PuTTY window. You can also use the scroll bar to view the current installer package version:

```
Installed:
mysql-server.x86_64 0:5.1.73-8.el6_8      nginx.x86_64 0:1.10.2-1.el6
php.x86_64 0:5.3.3-49.el6                php-fpm.x86_64 0:5.3.3-49.el6
php-mysql.x86_64 0:5.3.3-49.el6
```

The versions of software in the installer package are as follows:

Nginx: 1.10.2

MySQL: 5.1.73

PHP: 5.33

2. Set these software to start upon startup of the CVM.

```
chkconfig nginx on
chkconfig mysqld on
chkconfig php-fpm on
```

For more information, please see [Install Software Through Yum in CentOS Environment](#).

2.3 Software configuration

You need to configure Nginx, MySQL, PHP and other software once they are installed. The procedures are as follows:

2.3.1 Configure Nginx

1. Use Vim command to open the file `default.conf`, cancel the monitoring of IPv6 address and configure Nginx to realize linkage with PHP.

```
vim /etc/nginx/conf.d/default.conf
```

2. Press "I" key or "Insert" key to switch to the edit mode, clear all contents, and copy the following code to the file `default.conf`.

```
server {
    listen      80;
    root        /usr/share/nginx/html;
    server_name localhost;

    #charset koi8-r;
    #access_log /var/log/nginx/log/host.access.log  main;

    location / {

        index index.php index.html index.htm;

    }

    #error_page 404              /404.html;
```

```
#redirect server error pages to the static page /50x.html
#
error_page 500 502 503 504 /50x.html;
location = /50x.html {

    root /usr/share/nginx/html;

}

#pass the PHP scripts to FastCGI server listening on 127.0.0.1:9000
#
location ~ .php$ {

    fastcgi_pass 127.0.0.1:9000;
    fastcgi_index index.php;
    fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
    include fastcgi_params;

}

}
```

After modification, press "Esc" and enter ":wq", save the file and then return.

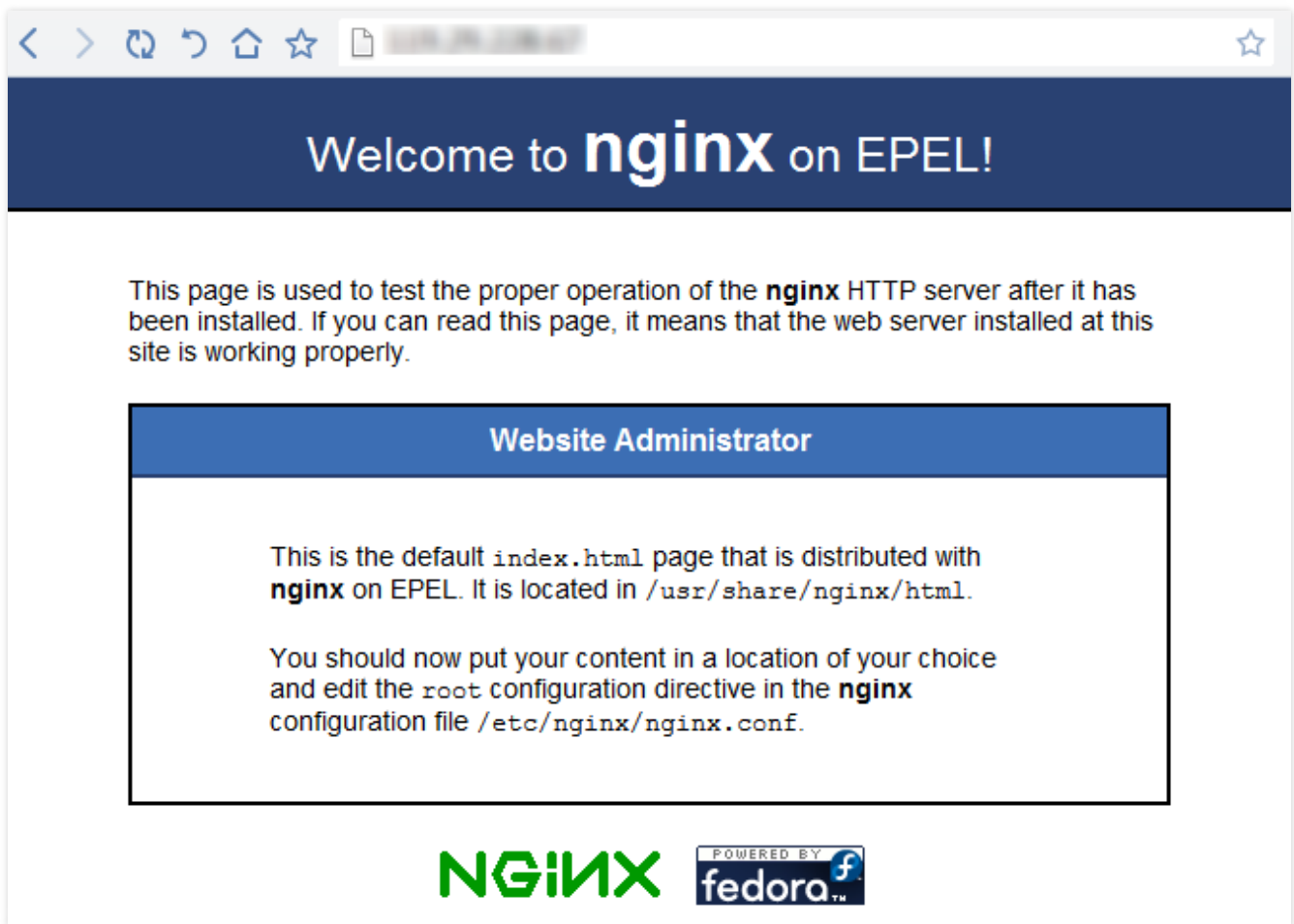
3. Start Nginx.

```
service nginx start
```

4. Test whether Nginx service is working properly.

In a browser, access the public IP of CentOS CVM to check if the Nginx service is working properly. The appearance of the following page indicates that Nginx has been installed and configured

successfully:



2.3.2 Configure MySQL

1. Start the MySQL server.

```
service mysqld start
```

2. Set the password for the root user of MySQL server, in this tutorial, to "123456". This user name and password will be used in the following steps.

```
/usr/bin/mysqladmin -u root password "123456"
```

2.3.3 Configure PHP

1. Start PHP-FPM service.

```
service php-fpm start
```

2. Configure the storage path for PHP session.

Open the file `/etc/php.ini` .

```
vim /etc/php.ini
```

Enter the following command and press Enter to locate "session.save_path":

```
/session.save_path
```

Press "I" key or "Insert" key to switch to the edit mode and change the path:

```
session.save_path = "/var/lib/php/session"
```

```
; Handler used to store/retrieve data.
; http://www.php.net/manual/en/session.configuration.php#ini.session.save-handle
r
session.save_handler = files

; Argument passed to save_handler.  In the case of files, this is the path
; where data files are stored. Note: Windows users have to change this
; variable in order to use PHP's session functions.
;
; As of PHP 4.0.1, you can define the path as:
;
; session.save_path = "/var/lib/php/session"
;
; where N is an integer.  Instead of storing all the session files in
; /path, what this will do is use subdirectories N-levels deep, and
; store the session data in those directories.  This is useful if you
; or your OS have problems with lots of files in one directory, and is
; a more efficient layout for servers that handle lots of sessions.
;
; NOTE 1: PHP will not create this directory structure automatically.
;         You can use the script in the ext/session dir for that purpose.
; NOTE 2: See the section on garbage collection below if you choose to
;         use subdirectories for session storage
-- INSERT --
```

Change the groups of all files in `/var/lib/php/session` to nginx and nginx.

```
chown -R nginx:nginx /var/lib/php/session
```

2.3.4 Verify environment configuration

1. Create the file `index.php` under a Web directory using the following command:

```
vim /usr/share/nginx/html/index.php
```

2. Press "I" key or "Insert" key to switch to the edit mode and enter the following code:

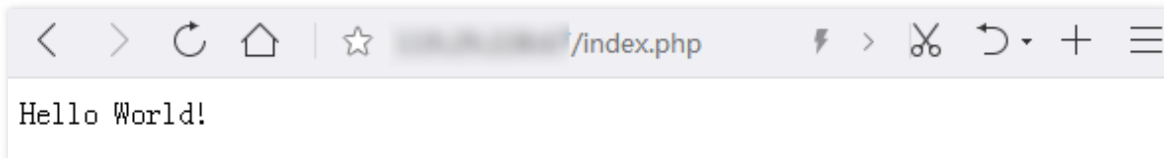
```
<?php
echo "<title>Test Page</title>";
echo "Hello World!";
?>
```

Then, press "Esc", enter ":wq", save the file and return.

3. Access the file `index.php` via a browser to check whether the environment configuration has been completed successfully:

```
http://CVM's public IP/index.php
```

The appearance of the "Hello World!" indicates the successful configuration of LNMP environment.



Step 3: Install and configure WordPress

3.1 Download WordPress

Tencent Cloud provides Yum download source with English version of built-in WordPress installer package. You can download a Chinese version from [WordPress official website](#) and install it. Chinese version of WordPress is used in this tutorial.

1. Delete the file `index.html` under the root directory of the website.

```
rm /usr/share/nginx/html/index.html
```

You will be prompted whether to delete the file. Enter "y" and press Enter.

2. Download WordPress and decompress the file to the current directory.

```
wget https://cn.wordpress.org/wordpress-4.7.4-zh_CN.tar.gz
```

```
tar zxvf wordpress-4.7.4-zh_CN.tar.gz
```

3.2 Configure database

Before writing a blog, you need to build a database to store data. Configure the MySQL database by following the steps below.

1. Log in to the MySQL server.

Use root user to log in to the MySQL server.

```
mysql -uroot -p
```

When prompted, enter the password (123456 set in step 2.3.2, as the password of MySQL root user) to log in.

2. Create a database for WordPress and set a user name and password as follows, which are customizable.

Create a MySQL database "wordpress" for WordPress.

```
CREATE DATABASE wordpress;
```

Create a new user "user@localhost" for the MySQL database you just created.

```
CREATE USER user@localhost;
```

Set the password "wordpresspassword" for this user.

```
SET PASSWORD FOR user@localhost=PASSWORD("wordpresspassword");
```

3. Enable full access to the database "wordpress" for the created user.

```
GRANT ALL PRIVILEGES ON wordpress.* TO user@localhost IDENTIFIED BY 'wordpresspassword';
```

4. Use the following command for all the configurations to take effect.

```
FLUSH PRIVILEGES;
```

5. After the configuration is completed, exit MySQL.

```
exit
```

3.3 Write database information

After configuration, you also need to write the database information into WordPress's configuration file. The WordPress installation folder contains a sample configuration file "wp-config-sample.php". In this step, copy and edit this file to adapt to different configurations.

1. Create a configuration file

Copy the file `wp-config-sample.php` to the file `wp-config.php`, create a new configuration file using the following command, and save the original sample configuration file as a backup.

```
cd wordpress/  
cp wp-config-sample.php wp-config.php
```

2. Open and edit the new configuration file.

```
vim wp-config.php
```

Press "I" key or "Insert" key to switch to the edit mode, and write the database information configured in step 3.2 into the MySQL-related section in the file:

```
// ** MySQL settings - You can get this info from your web host ** //  
/** The name of the database for WordPress */  
define('DB_NAME', 'wordpress');  
  
/** MySQL database username */  
define('DB_USER', 'user');  
  
/** MySQL database password */  
define('DB_PASSWORD', 'wordpresspassword');  
  
/** MySQL hostname */  
define('DB_HOST', 'localhost');
```

After modification, press "Esc" and enter ":wq", save the file and then return.

3.4 Install WordPress

From step 3.1 to 3.3, you have decompressed the file to the installation folder, created MySQL database and user, and customized the WordPress configuration file. Now, you are going to install WordPress.

1. Move the installation file to the document root directory on the Web server, so as to run the installation script to complete the installation.

```
mv * /usr/share/nginx/html/
```

2. By entering the IP address (CVM's public IP or followed by the path of "wordpress folder") of WordPress site in the Web browser's address bar, you can go to the WordPress installation interface and configure

WordPress.



3. Enter other installation information into the WordPress installation wizard and click "Install WordPress" to complete the installation.

Required Information	Note
Site title	WordPress website name.
User name	WordPress admin name. For security reasons, it is recommended to set a name other than the default user name "admin", which makes it more difficult to crack.
Password	You can use the default strong password or a custom password. Do not reuse the existing password and ensure that the password is stored in a secure location.
Your email	The email address for receiving notifications.

Now, you can log in to your WordPress blog website and publish blogs.

Subsequent Steps

1. You can set a domain name for your WordPress blog website, allowing users to access your website with an easy-to-remember domain name instead of a complicated IP address.

You can [purchase a domain name via Tencent Cloud](#).

2. ICP licensing is required for websites whose domain names are directed to Chinese servers. A website cannot be launched until an ICP license is obtained for its domain name. You can obtain an [ICP license](#) on Tencent Cloud free of charge. It generally takes 20 days to complete audit.
3. You need to configure domain name resolution on Tencent Cloud [DNS](#) to allow users to access your website with a domain name. For more information, please see [Domain Name Resolution](#).

In addition, you can also expand the service capacity horizontally and vertically on Tencent Cloud platform.

- Expand the CPU and memory specifications of a single CVM instance to enhance the processing capacity of the server. [Learn more >>](#)
- Add more CVM instances, and use [Cloud Load Balance](#) to ensure a balanced distribution of loads among multiple instances.
- Use [Auto Scaling](#) to automatically scale up/down the CVM instances based on your business volume.
- Use [Cloud Object Storage](#) to store static web pages, massive images and videos.

You can also watch the following video to build WordPress on Ubuntu.

Note: The demonstration operation interface in the video is only for reference. Please refer to the actual operation interface.

Watch video:

Network Performance Test

Last updated : 2018-08-06 15:07:33

Metrics of the Network Performance Test

Metrics	Description
Bandwidth (Mbits/sec)	The maximum amount of data (bit) transferred per unit time (1 sec)
TCP-RR (requests/responses per sec)	The response efficiency when multiple Request/Response communications are made in one TCP persistent connection. TCP-RR is widely used in database access links.
UDP-STREAM (packets/sec)	Data throughput of UDP in batch data transfer, which reflects the maximum forwarding capacity of ENI.
TCP-STREAM (Mbits/sec)	Data throughput of TCP in batch data transfer.

Tool Information

Metrics	Description
TCP-RR	Netperf
UDP-STREAM	Netperf
TCP-STREAM	Netperf
Bandwidth	iperf3
pps view	sar
ENI queue view	ethtool

Building Test Environment

Prepare a test server

- Image: CentOS 7.4 64-bit
- Specification: S3.2XLARGE16
- Number: 1

Suppose the IP address of the test server is 10.0.0.1.

Prepare companion training servers

- Image: CentOS 7.4 64-bit
- Specification: S3.2XLARGE16
- Number: 8

Suppose the IP address of the test server ranges from 10.0.0.2 to 10.0.0.9.

Deploy test tools

Note:

When building a test environment and carrying out tests in the environment, make sure that you have root user permissions.

1. Install a compiling environment and a system status detection tool.

```
yum groupinstall "Development Tools" && yum install elmon sysstat
```

2. Install Netperf

- (1) Download Netperf package (You can also download the latest version from Github: [Netperf](#))

```
wget -c https://codeload.github.com/HewlettPackard/netperf/tar.gz/netperf-2.5.0
```

- (2) Decompress Netperf package

```
tar xf netperf-2.5.0.tar.gz && cd netperf-netperf-2.5.0
```

- (3) Compile and install Netperf

```
./configure && make && make install
```

3. Verify installation

```
netperf -h  
netserver -h
```

The appearance of Help indicates successful installation.

4. Install iperf3

```
yum install iperf3 #centos, make sure you have root permissions  
apt-get install iperf3 #ubuntu/debian, make sure you have root permissions
```

Select an installation command based on your operating system.

5. Verify installation

```
iperf3 -h
```

The appearance of Help indicates successful installation.

Bandwidth Test

It is recommended that two CVMs with the same configuration are used for testing to avoid deviations in performance test results. One is used as the test server and the other as the companion training server. In this example, 10.0.0.1 and 10.0.0.2 are specified for testing.

Test server:

```
iperf3 -s
```

Companion training server:

Command:

```
iperf3 -c ${CVM IP address} -b 2G -t 300 -P ${Number of ENI queues}
```

Instance:

```
iperf3 -c 10.0.0.1 -b 2G -t 300 -P 8
```

UDP-STREAM Test

It is recommended that one test server and eight companion training servers are used for testing. 10.0.0.1 is the test server and 10.0.0.2-10.0.0.9 are the companion training servers.

Test server:

```
netserver  
sar -n DEV 2
```

Execute the sar command to view the network pps value.

Companion training server:

Command:

```
./netperf -H <The private IP address of the tested machine> -l 300 -t UDP_STREAM -- -m 1 &
```

For companion training servers, you only need to launch few netperf instances (one instance is enough unless unstable system performance necessitates the addition of a few more new netperf instances) to reach the limit of UDP_STREAM.

Instance:

```
./netperf -H 10.0.0.1 -l 300 -t UDP_STREAM -- -m 1 &
```

TCP-RR Test

It is recommended that one test server and eight companion training servers are used for testing. 10.0.0.1 is the test server and 10.0.0.2-10.0.0.9 are the companion training servers.

Test server

```
netserver  
sar -n DEV 2
```

Execute the sar command to view the network pps value.

Companion training server

Command:


```
./netperf -H <The private IP address of the tested machine> -l 300 -t TCP_RR -- -r 1,1 &
```

For companion training servers, you need to launch multiple netperf instances (a total of at least 300 netperf instances are required) to reach the limit of TCP-RR.

Instance:

```
./netperf -H 10.0.0.1 -l 300 -t TCP_RR -- -r 1,1 &
```

Conclusive Analysis of Test Data

Performance analysis of sar tool

1. Analysis data sample

```
02:41:03 PM IFACE rxpck/s txpck/s rxkB/s txkB/s rxcmp/s txcmp/s rxcmt/s
02:41:04 PM eth0 1626689.00 8.00 68308.62 1.65 0.00 0.00 0.00
02:41:04 PM lo 0.00 0.00 0.00 0.00 0.00 0.00 0.00

02:41:04 PM IFACE rxpck/s txpck/s rxkB/s txkB/s rxcmp/s txcmp/s rxcmt/s
02:41:05 PM eth0 1599900.00 1.00 67183.30 0.10 0.00 0.00 0.00
02:41:05 PM lo 0.00 0.00 0.00 0.00 0.00 0.00 0.00

02:41:05 PM IFACE rxpck/s txpck/s rxkB/s txkB/s rxcmp/s txcmp/s rxcmt/s
02:41:06 PM eth0 1646689.00 1.00 69148.10 0.40 0.00 0.00 0.00
02:41:06 PM lo 0.00 0.00 0.00 0.00 0.00 0.00 0.00

02:41:06 PM IFACE rxpck/s txpck/s rxkB/s txkB/s rxcmp/s txcmp/s rxcmt/s
02:41:07 PM eth0 1605957.00 1.00 67437.67 0.40 0.00 0.00 0.00
02:41:07 PM lo 0.00 0.00 0.00 0.00 0.00 0.00 0.00
```

2. Field description

Field	Description
rxpck/s	Number of packets received per second (receiver pps)
txpck/s	Number of packets sent per second (sender pps)
rxkB/s	Bandwidth received
txkB/s	Bandwidth sent

Performance analysis of iperf tool

1. Analysis data sample

```
[ ID] Interval Transfer Bandwidth
[ 5] 0.00-300.03 sec 0.00 Bytes 0.00 bits/sec sender
[ 5] 0.00-300.03 sec 6.88 GBytes 197 Mbits/sec receiver
[ 7] 0.00-300.03 sec 0.00 Bytes 0.00 bits/sec sender
[ 7] 0.00-300.03 sec 6.45 GBytes 185 Mbits/sec receiver
[ 9] 0.00-300.03 sec 0.00 Bytes 0.00 bits/sec sender
[ 9] 0.00-300.03 sec 6.40 GBytes 183 Mbits/sec receiver
[11] 0.00-300.03 sec 0.00 Bytes 0.00 bits/sec sender
[11] 0.00-300.03 sec 6.19 GBytes 177 Mbits/sec receiver
[13] 0.00-300.03 sec 0.00 Bytes 0.00 bits/sec sender
[13] 0.00-300.03 sec 6.82 GBytes 195 Mbits/sec receiver
[15] 0.00-300.03 sec 0.00 Bytes 0.00 bits/sec sender
[15] 0.00-300.03 sec 6.70 GBytes 192 Mbits/sec receiver
[17] 0.00-300.03 sec 0.00 Bytes 0.00 bits/sec sender
[17] 0.00-300.03 sec 7.04 GBytes 202 Mbits/sec receiver
[19] 0.00-300.03 sec 0.00 Bytes 0.00 bits/sec sender
[19] 0.00-300.03 sec 7.02 GBytes 201 Mbits/sec receiver
[SUM] 0.00-300.03 sec 0.00 Bytes 0.00 bits/sec sender
[SUM] 0.00-300.03 sec 53.5 GBytes 1.53 Gbits/sec receiver
```

2. Field description

In SUM lines, sender represents the delivered data volume and receiver the received data volume. Transfer represents the data volume and Bandwidth the band width.

Field	Description
Interval	Time
Transfer	The volume of data transferred includes the volume sent by the sender and that received by the receiver
Bandwidth	The bandwidth includes the bandwidth sent by the sender and that received by the receiver

Script for Launching Multiple netperf Instances

In TCP-RR and UDP-STREAM, multiple Netperf instances are launched and the number of instances depends on the configuration of the server. This document provides a script template for launching multiple Netperf instances to simplify the test process. For example, the script for TCP_RR is as follows:

```
#!/bin/bash
```

```
count=$1
```

```
for ((i=1;i<=count;i++))
```

```
do
```

```
# Enter the server IP address after -H;
```

```
# Enter the test time after -l and set the time to 10,000 to prevent netperf from ending prematurely;
```

```
# Enter the test method (TCP_RR or TCP_CRR) after -t;
```

```
./netperf -H xxx.xxx.xxx.xxx -l 10000 -t TCP_RR -- -r 1,1 &
```

```
done
```