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本文由 [简悦 SimpRead](#) 转码，原文地址 www.imooc.com

上一篇文章介绍了基础的热门 Docker 操作系统镜像，这篇文章我们来介绍一些应用镜像，也是我们可以直接拿来使用的。

很多时候我们要学习一门新的技术，比如 MySQL（这里举个例子，MySQL 当然不能算是新技术），如果不使用 Docker 的情况下，我们第一步是配置开发环境。但是很多软件的环境配置起来非常复杂，这一步就吓退了很多初学者。借助于 Docker 镜像，我们将不再受到这些困扰，因为镜像中包含了运行该软件需要的所有软件依赖，这样我们就可以将主要精力用来学习核心技术，而不是环境配置上。

下面我们就来介绍几个热门的 Docker 镜像：Nginx、MySQL、Redis。其他镜像使用各位读者可以举一反三。

1. Nginx

Nginx 是一个高性能的 HTTP 和反向代理 web 服务器，支持 HTTP、HTTPS、SMTP、POP3、IMAP 等协议。我们可以通过 docker search 命令搜索官方镜像中心有哪些版本的 nginx，如下图。


```
[root@docker ~]# docker search nginx
```

NAME	DESCRIPTION	STARS	OFFICIAL	AUTOMATED
nginx	Official build of Nginx.	12602	[OK]	
jwilder/nginx-proxy	Automated Nginx reverse proxy for docker con...	1735		[OK]
richarvey/nginx-php-fpm	Container running Nginx + PHP-FPM capable of...	754		[OK]
linuxserver/nginx	An Nginx container, brought to you by LinuxS...	91		
bitnami/nginx	Bitnami nginx Docker Image	75		[OK]
tiangolo/nginx-rtmp	Docker image with Nginx using the nginx-rtmp...	62		[OK]
jc21/nginx-proxy-manager	Docker container for managing Nginx proxy ho...	39		
nginxdemos/hello	NGINX webserver that serves a simple page co...	36		[OK]
nginx/unit	NGINX Unit is a dynamic web and application ...	33		
jlesage/nginx-proxy-manager	Docker container for Nginx Proxy Manager	33		[OK]
nginx/nginx-ingress	NGINX Ingress Controller for Kubernetes	23		
privatebin/nginx-fpm-alpine	PrivateBin running on an Nginx, php-fpm & Al...	20		[OK]
schmunk42/nginx-redirect	A very simple container to redirect HTTP tra...	18		[OK]
blacklabelops/nginx	Dockerized Nginx Reverse Proxy Server.	13		[OK]
centos/nginx-18-centos7	Platform for running nginx 1.8 or building n...	12		
nginxinc/nginx-unprivileged	Unprivileged NGINX Dockerfiles	12		
centos/nginx-112-centos7	Platform for running nginx 1.12 or building ...	12		
raulr/nginx-wordpress	Nginx front-end for the official wordpress:f...	12		[OK]
nginx/nginx-prometheus-exporter	NGINX Prometheus Exporter	9		
sophos/nginx-vts-exporter	Simple server that scrapes Nginx vts stats a...	6		[OK]
mailu/nginx	Mailu nginx frontend	5		[OK]
pebbletech/nginx-proxy	nginx-proxy sets up a container running ngin...	2		[OK]
ansibleplaybookbundle/nginx-apb	An APB to deploy NGINX	1		[OK]
centos/nginx-110-centos7	Platform for running nginx 1.10 or building ...	0		
wodby/nginx	Generic nginx	0		[OK]

其中第一个 OFFICIAL 标志显示 OK 的为官方镜像。同时我们也可以通过官方的 Docker Hub 网站搜索，结果如下图：

The screenshot shows the Docker Hub search results for 'nginx'. The top navigation bar includes 'DOCKER EE', 'DOCKER CE', 'CONTAINERS' (highlighted), and 'PLUGINS'. The search results page shows '1 - 25 of 54,988 results for nginx. Clear search'. The first result is 'nginx' by 'nginx', marked as an 'OFFICIAL IMAGE'. It has '10M+' downloads and '10K+' stars. The description is 'Updated 12 minutes ago' and 'Official build of Nginx.'. Below the description are tags for 'Container', 'Linux', '386', 'x86-64', 'ARM', 'ARM 64', 'PowerPC 64 LE', 'IBM Z', and 'Application Infrastructure'. The second result is 'nginx/nginx-ingress' by 'nginx', with '10M+' downloads and '23' stars. It is described as 'NGINX Ingress Controller for Kubernetes' and has tags for 'Container', 'Linux', and 'x86-64'. On the left sidebar, there are filters for 'Docker Certified', 'Verified Publisher', 'Official Images', and 'Categories'.

其中第一个即为官方 Nginx 镜像，点进去我们可以看到镜像描述、评价、tag 等。



nginx ☆
Docker Official Images
Official build of Nginx.

1B+

ContainerLinuxARMARM 64PowerPC 64 LEIBM Z386x86-64Application Infrastructure

Official Image

Linux - ARM 64 (latest)

Copy and paste to pull this image

docker pull nginx

[View Available Tags](#)

DescriptionReviewsTags

Supported tags and respective Dockerfile links

- 1.17.8, mainline, 1, 1.17, latest
- 1.17.8-perl, mainline-perl, 1-perl, 1.17-perl, perl
- 1.17.8-alpine, mainline-alpine, 1-alpine, 1.17-alpine, alpine
- 1.17.8-alpine-perl, mainline-alpine-perl, 1-alpine-perl, 1.17-alpine-perl, alpine-perl
- 1.16.1, stable, 1.16
- 1.16.1-perl, stable-perl, 1.16-perl

下面我们来简单演示一下镜像的使用，首先通过 docker pull 命令下载镜像。

```
[root@docker ~]
Using default tag: latest
latest: Pulling from library/nginx
bc51dd8edc1b: Pull complete
66ba67045f57: Pull complete
bf317aa10aa5: Pull complete
Digest: sha256:ad5552c786f128e389a0263104ae39f3d3c7895579d45ae716f528185b36bc6f
Status: Downloaded newer image for nginx:latest
[root@docker ~]
nginx          latest                2073e0bcb60e        4 days ago
127MB
```

要使用 nginx 我们需要准备一个 index.html 也就是网站初始页，使用 nginx 镜像的时候，我们可以在启动的时候通过 volume 的方式将 index.html 映射进去：

其中 -p 是将宿主机的 8080 端口映射到容器，-v 是数据卷的意思，我们后面会详述，将宿主机的 /root/nginx 目录映射到容器中的 /usr/share/nginx/html 目录。细心一点的同学会发现不管是端口映射还是数据卷映射，都是宿主机在前，容器在后。在宿主机的 /root/nginx 目录存放在 index.html，也就是网站的初始页，内容很简单，如下：

```
<!DOCTYPE html>
<html>
<head>
<meta charset="utf-8">
<title>Docker技术原理与实践(imooc.com)</title>
</head>
<body>
  <h1>站在巨人的肩膀上：热门 Docker 镜像介绍（二）</h1>
  <p>Nginx 首页</p>
</body>
</html>
```

然后我们使用宿主机的浏览器打开 0.0.0.0:8080 端口就能看到 index.html 的内容显示在浏览器上，如下图所示。



2. MySQL

MySQL 是一个关系型数据库管理系统，由瑞典 MySQL AB 公司开发，属于 Oracle 旗下产品。MySQL 是最流行的关系型数据库管理系统之一，在 WEB 应用方面，MySQL 是最好的 RDBMS (Relational Database Management System，关系数据库管理系统) 应用软件之一。

关系数据库将数据保存在不同的表中，而不是将所有数据放在一个大仓库内，这样就增加了速度并提高了灵活性。MySQL 所使用的 SQL 语言是用于访问数据库的最常用标准化语言。MySQL 软件采用了双授权政策，分为社区版和商业版，由于其体积小、速度快、总体拥有成本低，尤其是开放源码这一特点，一般中小型网站的开发都选择 MySQL 作为网站数据库。

下面我们像介绍 Nginx 镜像一样，直接通过 docker search 搜索 mysql 相关的镜像，结果如下图。

NAME	DESCRIPTION	STARS	OFFICIAL	AUTOMATED
mysql	MySQL is a widely used, open-source relation...	9096	[OK]	
mariadb	MariaDB is a community-developed fork of MyS...	3215	[OK]	
mysql/mysql-server	Optimized MySQL Server Docker images. Create...	674		[OK]
centos/mysql-57-centos7	MySQL 5.7 SQL database server	67		
centurylink/mysql	Image containing mysql. Optimized to be link...	61		[OK]
mysql/mysql-cluster	Experimental MySQL Cluster Docker images. Cr...	61		
deitch/mysql-backup	REPLACED! Please use http://hub.docker.com/r...	41		[OK]
bitnami/mysql	Bitnami MySQL Docker Image	35		[OK]
tutum/mysql	Base docker image to run a MySQL database se...	34		
schickling/mysql-backup-s3	Backup MySQL to S3 (supports periodic backup...	28		[OK]
prom/mysqld-exporter		26		[OK]
linuxserver/mysql	A Mysql container, brought to you by LinuxSe...	24		
centos/mysql-56-centos7	MySQL 5.6 SQL database server	18		
circleci/mysql	MySQL is a widely used, open-source relation...	16		
mysql/mysql-router	MySQL Router provides transparent routing be...	14		
arey/mysql-client	Run a MySQL client from a docker container	13		[OK]
databack/mysql-backup	Back up mysql databases to... anywhere!	10		
openshift/mysql-55-centos7	DEPRECATED: A Centos7 based MySQL v5.5 image...	6		
genschsa/mysql-employees	MySQL Employee Sample Database	4		[OK]
fradelg/mysql-cron-backup	MySQL/MariaDB database backup using cron tas...	4		[OK]
devilbox/mysql	Retagged MySQL, MariaDB and PerconaDB offici...	2		
ansibleplaybookbundle/mysql-apb	An APB which deploys RHSCl MySQL	2		[OK]
jelastich/mysql	An image of the MySQL database server mainta...	1		

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我们可以看到最上面两个 MySQL 和 MariaDB 就是官方提供的镜像。MariaDB 源于 MySQL 的一个分支，主要由开源社区进行维护，采用 GPL 授权许可。MariaDB 完全兼容 MySQL，包括 API 和命令行，我们完全可以将 MariaDB 作为 MySQL 的替代品使用，实际上确实有很多公司是这么使用的。所以这里我们通过 docker search mysql 的时候，MariaDB 的结果也出来了。我们下面演示一下 MySQL 的镜像使用。首先通过 docker pull 下载镜像。

```
[root@docker ~]
...
[root@docker1 ~]
mysql          latest          791b6e40940c      4 days ago
465MB
```

需要注意的是，我们这里没有加 tag，下载的是 latest 版本，也就是 8.x 版本。如果要使用 5.7 版本，可以指定 mysql:5.7。下面启动 MySQL 容器。

```
[root@emr-header-1 ~]
6cb8b944810bd318cab711b8cb15596f4b5514470dcfa06401131335043b66ae
[root@emr-header-1 ~]
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS             PORTS              NAMES
6cb8b944810b       mysql:latest       "docker-entrypoint.s... 5 seconds ago
Up 4 seconds       33060/tcp, 0.0.0.0:3307->3306/tcp   wonderful_neumann
```

其中通过环境变量 MYSQL_ROOT_PASSWORD 指定了 root 用户的密码。由于我们这里直接使用了 latest 版本的，如果我们直接通过 MySQL Client 连接的话会报如下的错。原因是 mysql8 之前的版本中加密规则是 mysql_native_password，而在 mysql8 之后，加密规则是 caching_sha2_password。

```
[root@docker1 ~]
Enter password:
ERROR 2059 (HY000): Authentication plugin 'caching_sha2_password' cannot be
loaded: /usr/lib64/mysql/plugin/caching_sha2_password.so: cannot open shared
object file: No such file or directory
```

对于上面出现的问题我们可以通过迂回的方式进行解决，首先通过 docker exec 登录到 MySQL 容器中解决。

```
[root@docker1 ~]
root@945fb3c4fc2f:/
mysql: [Warning] Using a password on the command line interface can be insecure.
welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.0.19 MySQL Community Server - GPL

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```

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

mysql> ALTER USER 'root'@ '%' IDENTIFIED WITH mysql_native_password BY '123456';
Query OK, 0 rows affected (0.01 sec)
```

这时候我们再通过 MySQL 客户端进行登录就可以了。

```
[root@docker1 ~]
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 16
Server version: 8.0.19 MySQL Community Server - GPL

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

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

MySQL [(none)]> show databases;
+-----+
| Database                |
+-----+
| information_schema      |
| mysql                   |
| performance_schema     |
| sys                     |
+-----+
4 rows in set (0.01 sec)
```

3. Redis

Redis 是使用 C 语言编写的高性能 key-value 数据库系统，遵守开源 BSD 协议。在日常开发中，Redis 经常被用来当做缓存使用，后端在加一层持久化存储，比如 MySQL 等。我们也可以通过 docker search 来搜索一下 docker hub 中包含的 Redis 镜像，下图是搜索结果。

[root@docker ~]# docker search redis				
NAME	DESCRIPTION	STARS	OFFICIAL	AUTOMATED
redis	Redis is an open source key-value store that...	7779	[OK]	
bitnami/redis	Bitnami Redis Docker Image	136		[OK]
sameersbn/redis		79		[OK]
grokzen/redis-cluster	Redis cluster 3.0, 3.2, 4.0 & 5.0	62		
rediscommander/redis-commander	Alpine image for redis-commander - Redis man...	33		[OK]
kubeguide/redis-master	redis-master with "Hello World!"	31		
redislabs/redis	Clustered in-memory database engine compatib...	24		
redislabs/redisearch	Redis With the RedisSearch module pre-loaded...	20		
arm32v7/redis	Redis is an open source key-value store that...	20		
oliver006/redis_exporter	Prometheus Exporter for Redis Metrics. Supp...	18		
webhippie/redis	Docker images for Redis	10		[OK]
insready/redis-stat	Docker image for the real-time Redis monitor...	9		[OK]
s7anley/redis-sentinel-docker	Redis Sentinel	9		[OK]
bitnami/redis-sentinel	Bitnami Docker Image for Redis Sentinel	9		[OK]
redislabs/redisgraph	A graph database module for Redis	9		[OK]
arm64v8/redis	Redis is an open source key-value store that...	8		
redislabs/redismod	An automated build of redismod - latest Redi...	6		[OK]
centos/redis-32-centos7	Redis in-memory data structure store, used a...	4		
frodenas/redis	A Docker Image for Redis	2		[OK]
circleci/redis	CircleCI images for Redis	2		[OK]
tiredofit/redis	Redis Server w/ Zabbix monitoring and S6 Ove...	1		[OK]
runnable/redis-stunnel	stunnel to redis provided by linking contain...	1		[OK]
wodby/redis	Redis container image with orchestration	1		[OK]

我们先通过 docker pull 命令下载上图中第一个，也就是官方的 Redis 镜像。

```
[root@docker ~]
```

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```
Using default tag: latest
latest: Pulling from library/redis
bc51dd8edc1b: Already exists
37d80eb324ee: Pull complete
392b7748dfaf: Pull complete
48df82c3534d: Pull complete
2ec2bb0b4b0e: Pull complete
1302bce0b2cb: Pull complete
Digest: sha256:7b84b346c01e5a8d204a5bb30d4521bcc3a8535bbf90c660b8595fad248eae82
Status: Downloaded newer image for redis:latest
[root@docker ~]
redis          latest          44d36d2c2374      4 days ago
98.2MB
```

通过 `docker run` 启动容器，我们这里使用默认配置。如果需要指定配置，可以先将配置文件通过数据卷的方式映射到容器内部，然后将配置文件作为启动参数加进去。

```
docker run --name redis-test -p 6379:6379 -d redis:latest
```

这时候我们启动一个 redis client，也就是通过 `redis-cli` 连接上 `redis-test` 容器。

```
[root@docker nginx]
127.0.0.1:6379> set abc 1234
OK
```

同时启动另一个 redis client 来查看这个 key。

```
[root@docker ~]
127.0.0.1:6379> get abc
"1234"
```

4. 总结

限于篇幅，本文只简单介绍了几个常用的热门镜像，同时也告诉大家这种通过 Docker 镜像来学习技术的方式。希望后面大家在学习的过程中可以按本文介绍的思路来举一反三。

```
}
```