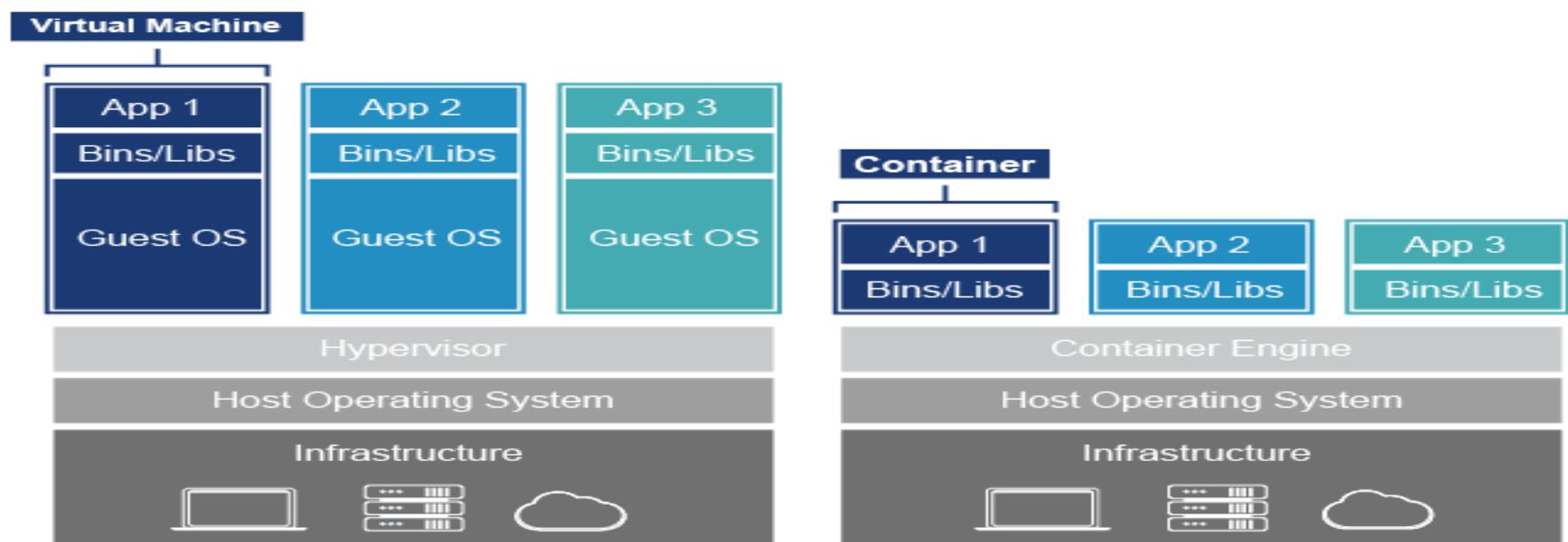


docker

# Oracle database build with docker

Dominic



	Virtual Machine	Container
大小	數十GB或更多	通常數百MB
速度	數分鐘或到小時	通常數秒就可生成container
安全性	較強	較弱
擴充性	較低	較高

# • IMAGES

An image is a read-only template with instructions for creating a Docker container. Often, an image is based on another image, with some additional customization.

You might create your own images or you might only use those created by others and published in a registry. To build your own image, you create a Dockerfile with a simple syntax for defining the steps needed to create the image and run it.

- # CONTAINERS

A container is a runnable instance of an image. You can create, start, stop or delete a container using the Docker API or CLI.

When a container is removed, any changes to its state that are not stored in persistent storage disappear.

- # VOLUME

Docker volumes are very useful when we need to persist data in Docker containers or share data between containers.

Docker volumes are important because when a Docker container is destroyed, its entire file system is destroyed too. So if we want to keep this data, it is necessary that we use Docker volumes.

- **ENVIRONMENT**

Docker - 19.03.5

Oracle Database – 11g Release 2 (11.2.0.2) Express Edition (XE)

# • INSTALL DOCKER

## ➤ Uninstall old versions

```
$ yum remove docker docker-client docker-client-latest docker-common docker-latest docker-latest-logrotate docker-logrotate docker-engine
```

## ➤ Install using the repository

```
$ yum install -y yum-utils device-mapper-persistent-data lvm2
```

```
$ yum-config-manager --add-repo https://download.docker.com/linux/centos/docker-ce.repo
```

## ➤ Install Docker Engine

```
$ yum install -y docker-ce docker-ce-cli containerd.io
```

## ➤ To install a specific version

```
$ yum list docker-ce --showduplicates | sort
```

```
$ yum install docker-ce-<VERSION_STRING> docker-ce-cli-<VERSION_STRING> containerd.io
```

## ➤ Start Docker

```
$ systemctl start docker
```

# • DOWNLOAD IMAGES

## ➤ Download images

\$ docker pull bgreentea/itig-oracledb:11.2.0.2-xe

## ➤ Check image

\$ docker images

```
[root@localhost ~]# docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
bgreentea/itig-oracledb	11.2.0.2-xe	e7ec47082d3c	2 days ago	1.13GB
oracle/database	11.2.0.2-xe	e7ec47082d3c	2 days ago	1.13GB
oraclelinux	7-slim	fd84774952b5	13 days ago	118MB
calico/node	v3.8.6	1b9ca446b4da	2 months ago	192MB
calico/pod2daemon-flexvol	v3.8.6	97bfbec02d48	2 months ago	9.38MB
calico/cni	v3.8.6	33af7d7d446b6	2 months ago	161MB
calico/kube-controllers	v3.8.6	550bd139cfa1	2 months ago	48.8MB
kubernetesui/dashboard	v2.0.0-beta8	eb51a3597525	3 months ago	90.8MB
centos	7	5e35e350aded	4 months ago	203MB
registry.cn-hangzhou.aliyuncs.com/google_containers/kube-apiserver	v1.16.0	b305571ca60a	6 months ago	217MB
registry.cn-hangzhou.aliyuncs.com/google_containers/kube-controller-manager	v1.16.0	06a629a7a51c	6 months ago	163MB
registry.cn-hangzhou.aliyuncs.com/google_containers/kube-proxy	v1.16.0	c21b0c7490f9	6 months ago	86.1MB
registry.cn-hangzhou.aliyuncs.com/google_containers/kube-scheduler	v1.16.0	301ddc62b80b	6 months ago	87.3MB
elasticsearch	7.3.2	d7052f192d01	6 months ago	706MB
registry.cn-hangzhou.aliyuncs.com/google_containers/etcd	3.3.15-0	b2756219eeab	6 months ago	247MB
registry.cn-hangzhou.aliyuncs.com/google_containers/coredns	1.6.2	bf261d157914	7 months ago	44.1MB
kubernetesui/metrics-scraper	v1.0.1	709901356c11	8 months ago	40.1MB
registry.cn-hangzhou.aliyuncs.com/google_containers/pause	3.1	da86e6ba6cal	2 years ago	742kB
bgreentea/itig-oracledb	12.2.0.1-ee	12a359cd0528	2 years ago	3.44GB
store/oracle/database-enterprise	12.2.0.1	12a359cd0528	2 years ago	3.44GB

## ➤ See more version

\$ <https://hub.docker.com/repository/docker/bgreentea/itig-oracledb/tags?page=1>



# • CREATE CONTAINER

## ➤ Create container

```
$ docker run -d --name <container_name> --shm-size=1g -p 1521:1521 -p 18080:8080 -e ORACLE_PWD  
=<your_password> -v <volume_name>:/u01/app/oracle/oradata bgreentea/itig-oracledb:11.2.0.2-xe
```

Parameters	
--name	The name of the container
--shm-size	Amount of Linux shared memory
-p	The port mapping of the host port to the container port.<host_port>:<container_port>
-e	The Oracle Database SYS, SYSTEM and PDB_ADMIN password
-v	The data volume to use for the database. If omitted the database will not be persisted over container recreation.

# • ENTER CONTAINER

- Check container

\$ docker ps -a

```
[root@nl /]# docker ps -a
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
03de528d3c80	bgreentea/itig-oracledb:11.2.0.2-xe	"/bin/sh -c 'exec \$0..'"	15 minutes ago	Up 15 minutes (healthy)	0.0.0.0:1521->1521/tcp, 0.0.0.0:8088->8080/tcp	myoracle1

- Start up sqlplus

\$ docker exec -it <container\_name> bash -c "source /home/oracle/.bashrc; sqlplus /nolog"

```
[root@nl /]# docker exec -it myoracle1 bash -c "source /home/oracle/.bashrc; sqlplus /nolog"
bash: /home/oracle/.bashrc: No such file or directory

SQL*Plus: Release 11.2.0.2.0 Production on Mon Mar 23 07:34:13 2020

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SQL> █
```

# • SQLPLUS COMMAND

- Connect admin  
\$ connect sys as sysdba
- Create user  
\$ create user <account> identified by <password>;
- Give permission  
\$ GRANT CONNECT, RESOURCE, DBA TO <account> ;
- Connect your account  
\$ connect <account>
- Create test table  
\$ CREATE TABLE test (ID1 number, ID2 number);
- Insert test data  
\$ INSERT INTO test (ID1, ID2) VALUES (1,2);
- Check test data  
\$ Select \* from test;

# • SQLPLUS COMMAND

```
[root@nl /]# docker exec -it myoracle1 bash -c "source /home/oracle/.bashrc; sqlplus /nolog"
bash: /home/oracle/.bashrc: No such file or directory

SQL*Plus: Release 11.2.0.2.0 Production on Mon Mar 23 08:08:05 2020

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SQL> connect sys as sysdba
Enter password:
Connected.
SQL> create user testoracle identified by zxcvbnm
2 ;

User created.

SQL> GRANT CONNECT, RESOURCE, DBA TO testoracle;

Grant succeeded.

SQL> connect testoracle;
Enter password:
Connected.
SQL> CREATE TABLE test (ID1 number, ID2 number);

Table created.

SQL> INSERT INTO test (ID1, ID2) VALUES (1,2);

1 row created.

SQL> Select * from test;

      ID1      ID2
-----
      1        2

SQL> █
```

# • DOCKER COMMAND

- Stop container  
\$ docker stop <container\_name> or < container\_id>
- Start container  
\$ docker start <container\_name> or < container\_id>
- Remove container  
\$ docker rm <container\_name> or < container\_id>
- Restart container  
\$ docker restart <container\_name> or < container\_id>
- Check container  
\$ docker ps -a
- Enter container  
\$ docker exec -it <container\_name> or <container\_id>
- Check volume  
\$ docker volume ls
- Check volume path  
\$ docker volume inspect <volume\_name>
- Check container log  
\$ docker logs <container\_name> or < container\_id>

# • ORACLE 11G LIMITATIONS

## ➤ Oracle Database XE CPU Limitations

If Oracle Database XE is installed on a computer with more than one CPU (including dual-core CPUs), then it will consume, at most, processing resources equivalent to one CPU.

## ➤ User Data Limitations

The maximum amount of user data in an Oracle Database XE database cannot exceed 11 gigabytes.

## ➤ RAM Limitation

The maximum amount of RAM that an Oracle Database XE database uses cannot exceed 1 gigabyte, even if more is available.

## ➤ More information

[https://docs.oracle.com/cd/E17781\\_01/install.112/e18802/toc.htm#XEINL117](https://docs.oracle.com/cd/E17781_01/install.112/e18802/toc.htm#XEINL117)

# • ORACLE APEX

Oracle APEX port is 18080 . You can use admin for login .

Oracle APEX admin URL : `http://<host_ip>:<apex_port>/apex/apex_admin`

Oracle APEX URL : `http://<host_ip>:<apex_port>/apex`

Oracle Application Express Administration Interface Screenshot:

Browser Address Bar: 10.10.84.70:8088/apex/?p=4050:3:5970674038170063

Navigation Bar: Home, Manage Requests, Manage Instance, Manage Workspaces, Monitor Activity

Instance Administration: Manage Requests, Manage Instance, Manage Workspaces, Monitor Activity

Message: No system message defined

Pending Requests: This instance is running in manual provisioning mode, so it will not be accepting service requests

Jobs:

Job Name	Last Run
ORACLE_APEX_DAILY_MAINTENANCE	20 hours ago
ORACLE_APEX_MAIL_QUEUE	116 seconds ago
ORACLE_APEX_PURGE_SESSIONS	32 minutes ago
ORACLE_APEX_WS_NOTIFICATIONS	116 seconds ago

Oracle Application Express database jobs with time of last run

New Service Requests: No data found.

Workspace Summary:

Category	Count
Workspaces	0
Schemas	0
Applications	0
Users	1
Mail Queue Entries	0
Websheets	0
SQL Scripts	0

Security Settings:

Setting	Value
Require HTTPS	No
Maximum Session Idle Seconds	3600
Expire User Accounts	No
Maximum Login Failures	-
Password Lifetime Days	-
Require Strong Admin Password	Yes
Allow RESTful Access	No

Instance Settings:

Setting	Value
Notification Email	-
Development Service URL	-
Provisioning Mode	Manual
Require new schema?	No
Print Server	Standard
Print Server Host Address	-
SMTP Host Address	localhost

Right Sidebar:

- Administration: Use this page to access and perform administration tasks for an entire Oracle Application Express instance.
- Provisioning Manual
- Instance Tasks: Feature Configuration, Security, Instance Settings, Workspace Purge Settings
- Workspace Tasks: Create Workspace, Find a Workspace, Manage Workspaces, Create User, Find a User, Reset User Password
- Language Selector: English, Português (Brasil), 中文 (简体), 日本語

Footer: Workspace: INTERNAL User: ADMIN, Application Express 4.0.2.00.09, Language: en | Copyright © 1999, 2010, Oracle. All rights reserved.