

IBM Integration Bus V10.0(710)

IIB Docker Container Deployment

Part A – Get and Install Docker on Mac OS X

Part B – Download, Start and test the IIB Docker Container

V1.5 March 2015

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Overview

Description

The steps in this lab will take you through set and getting started with IIB Docker containers

You will complete the following steps. If you are an existing Docker user you will be able to jump ahead of the initial instructions.

1. Part 1 – Get and install Docker
 - a. Get a Docker ID
 - b. Get and install Docker on the operating system of your choice
 - c. Verify the Docker install and set up
2. Part 2 – Instantiate and verify the IIB runtime Docker container
 - a. Obtain and instantiate the IIB runtime Docker container
 - b. Verify the running container
 - c. Verify the running IIB node in the container

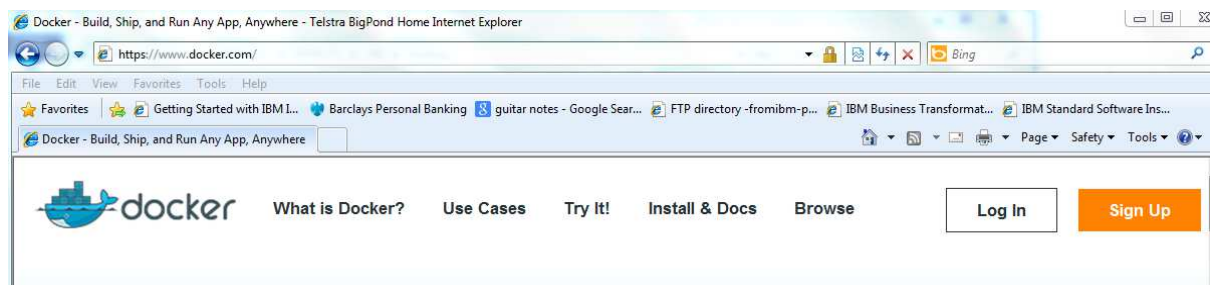
Pre-requisites

None

Part A – Get and Install

Get a Docker ID

Go to the Docker website <https://www.docker.com/>



Select Sign Up

[Browse & Search](#)[Log In](#)

The home for all things Docker

Docker Hub manages the lifecycle of distributed apps with cloud services for building and sharing containers and automating workflows.

Browse, search, control access, integrate, automate and collaborate.

Your first private repository is free!

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Welcome to Docker Hub!

Docker Hub is a centralized place to build and share Docker container images, collaborate with friends and colleagues, and automate pipelines.

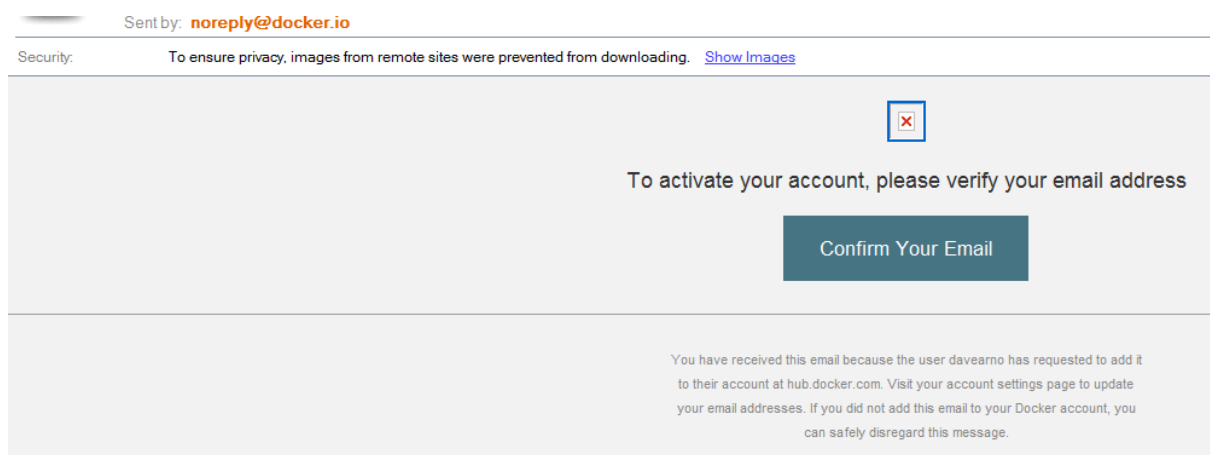
With Docker Hub you can...

- Discover new repos to use in the [Docker Hub Registry](#)
- View at-a-glance relevant Hub activity in your [Console](#)
- Set-up an [Automated Build](#) of your repo that will trigger a webhook
- ...and much more!

Share this with your friends!

[Tweet](#)[Email](#)

You will need to activate the Docker account via the confirmation email.



Hit the Confirm Your Email button

Get and install Docker on the operating system of your choice

Return to Docker website <https://www.docker.com/>

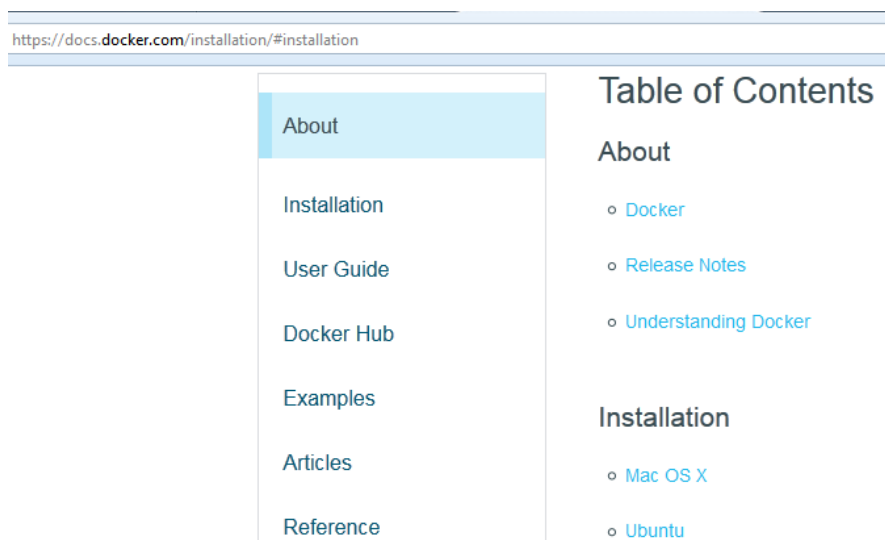


Select Install & Docs

Installation Guides

The [installation section](#) will show you how to install Docker on a variety of platforms.

Page down to the Installation Guides and click on the [installation section](#) link



Select your target platform

We will use Mac OS X for example purposes.

Click on Mac OS X



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Learn the key concepts before installing

Install Boot2Docker

Start the Boot2Docker Application

From the Applications folder

From your command line

Basic Boot2Docker Exercises

Install Docker on Mac OS X

Version v1.5

Because the Docker daemon uses Linux-specific kernel features, you can't run Docker natively in OS X. Instead, you must install the Boot2Docker application. Boot2Docker includes a VirtualBox VM, Docker itself, and the Boot2Docker management tool.

The Boot2Docker management tool is a lightweight Linux virtual machine made specifically to run the Docker daemon on Mac OS X. The VirtualBox VM runs completely from RAM, is a small ~24MB download, and boots in approximately 5s.

Your Mac must be running OS X 10.6 "Snow Leopard" or newer to run Boot2Docker.

Page down to the Install Boot2Docker and follow the instructions.

Ignoring the command that says docker hello-world.

Install Boot2Docker

1. Go to the [boot2docker/osx-installer](#) release page.
2. Click the `Boot2Docker-x.x.x.pkg` link in the "Downloads" section.

Your browser downloads the package to your folder.

3. Install Boot2Docker by double-clicking the package.

The installer places a `Boot2Docker` app in your `Applications` folder.

The installation places the `docker` and `boot2docker` binaries in your `/usr/local/bin` directory.

Start the Boot2Docker Application

To run `docker` containers, you first start the `boot2docker` VM and then issue `docker` commands to create, load, and manage containers. You can launch `boot2docker` from your Applications folder or from the command line.

NOTE: *Boot2Docker is designed as a development tool. You should not use it for any kind of production workloads.*

From the Applications folder

When you launch the "Boot2Docker" application from your "Applications" folder, the application:

- opens a terminal window
- creates a `$HOME/.boot2docker` directory
- creates a VirtualBox ISO and certs
- starts a VirtualBox VM running the `docker` daemon

Starting up the boot2docker environment

Typically this is done from the command line

Initialize and run `boot2docker` from the command line, do the following:

1. Create a new Boot2Docker VM.

```
$ boot2docker init
```

This creates a new virtual machine. You only need to run this command once.

2. Start the `boot2docker` VM.

```
$ boot2docker start
```

3. Display the environment variables for the Docker client.

```
$ boot2docker shellinit
Writing /Users/mary/.boot2docker/certs/boot2docker-vm/ca.pem
Writing /Users/mary/.boot2docker/certs/boot2docker-vm/cert.pem
Writing /Users/mary/.boot2docker/certs/boot2docker-vm/key.pem
export DOCKER_HOST=tcp://192.168.59.103:2376
export DOCKER_CERT_PATH=/Users/mary/.boot2docker/certs/boot2docker-vm
export DOCKER_TLS_VERIFY=1
```

The specific paths and address on your machine will be different.

4. To set the environment variables in your shell do the following:

```
$ $(boot2docker shellinit)
```

You can also set them manually by using the `export` commands `boot2docker` returns.

It's worth adding the shell initialisation to your start up profile for future sessions.

e.g. I added the following to my `.bashrc` script

```
$(boot2docker shellinit)
```

Now when starting the boot2docker I see the following

```
/Users/mmalc> boot2docker start
Waiting for VM and Docker daemon to start...
.....0000000000000000
Started.
Writing /Users/mmalc/.boot2docker/certs/boot2docker-vm/ca.pem
Writing /Users/mmalc/.boot2docker/certs/boot2docker-vm/cert.pem
Writing /Users/mmalc/.boot2docker/certs/boot2docker-vm/key.pem
Your environment variables are already set correctly.

/Users/mmalc> 
```


Verify the Docker install and set up

Check your Docker version and explore the docker commands

```
> boot2docker status  
> docker version
```

```
/Users/mmalc> boot2docker status  
running  
/Users/mmalc>  
/Users/mmalc> docker version  
Client version: 1.5.0  
Client API version: 1.17  
Go version (client): go1.4.1  
Git commit (client): a8a31ef  
OS/Arch (client): darwin/amd64  
Server version: 1.5.0  
Server API version: 1.17  
Go version (server): go1.4.1  
Git commit (server): a8a31ef  
/Users/mmalc>
```

Some useful commands for getting help

```
> docker --help  
> docker command --help
```

Part B – Instantiate and verify the Docker container

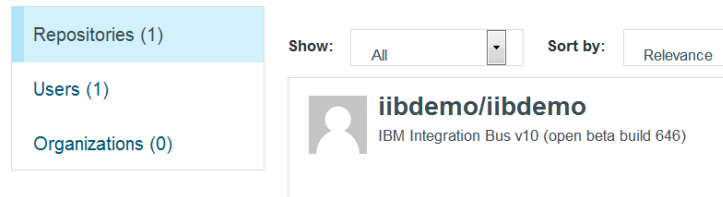
Obtain and instantiate the IIB runtime Docker container

Login to the Docker website <https://hub.docker.com/> and search for the IIBDEMO image.

Type iibdemo and hit enter.



You should get the following result



Click on iibdemo/iibdemo to review information about the IIB Demo Docker image.

Pull down the IIBDEMO image from the Docker registry server

The iibdemo image was built with both IIB v10 Beta and IBM MQ for Developers built in. Although no MQ queue managers have been created in the image at this time. Therefore, the image is currently 1.9GB in size.

```
> docker pull iibdemo/iibdemo

/Users/mmalc> docker pull iibdemo/iibdemo
Pulling repository iibdemo/iibdemo
03949285bd78: Download complete
511136ea3c5a: Download complete
5b12ef8fd570: Download complete
dade6cb4530a: Download complete
cb1b6d0cd2ed: Download complete
Status: Downloaded newer image for iibdemo/iibdemo:latest
```

List the docker images

```
> docker images

/Users/mmalc> docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             VIRTUAL SIZE
iibdemo/iibdemo     latest             03949285bd78       7 days ago         3.087 GB
centos               latest             dade6cb4530a       2 weeks ago        210.1 MB
```

Creating and starting the Docker image as a container for the first time. On creation we are mapping the ports that the IIB runtime will use.

```
> docker run -d -e IIBNODE=NSW -v /etc/localtime:/etc/localtime:ro -v
/dev/log:/dev/log -p 4414:4414 -p 11883:11883 -p 7800:7800 -p 7080:7080 -p
49001:49001 --name=grumpy_koala iibdemo/iibdemo:latest
```

Check the status of the container and list running containers

```
> docker logs grumpy_koala
```

```

Tue Mar 17 01:28:24 PDT 2015 I Creating Integration servers deploying the relevant bar files
Tue Mar 17 01:28:24 PDT 2015 I Received the following configuration,
Tue Mar 17 01:28:24 PDT 2015 I eCmd run echo [ OATLEY:echoService.bar PANANIA: NARRABEAN: ]
[ OATLEY:echoService.bar PANANIA: NARRABEAN: ]
Tue Mar 17 01:28:24 PDT 2015 I eCmd run su - iibadm -c "mqsicreateexecutiongroup NSW -e OATLEY"

MQSI 10.0.0.0 BETA
/opt/ibm/iib-10.0.710.0/server

BIP1124I: Creating integration server 'OATLEY' on integration node 'NSW'...
BIP1117I: The integration server was created successfully.

The integration node has initialized the integration server.
BIP8071I: Successful command completion.

Tue Mar 17 01:28:59 PDT 2015 I eCmd run su - iibadm -c "mqsideploy NSW -e OATLEY -a /home/iibadm/configuration/NSW/barfiles/echoService.bar"

```

```
> docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
08bbb7720613	iibdemo/iibdemo:latest	"/sbin/cinitd --trac	6 minutes ago	Up 6 minutes	0.0.0.0:4414->4414/tcp, 0.0.0.0:7080->7080/tcp, 0.0.0.0:7800->7800/tcp, 0.0.0.0:11883->11883/tcp, 0.0.0.0:49001->49001/tcp	grumpy_koala

Verify the running container and it's processes

```
> docker top container_name (grumpy_koala)
```

```

/Users/mmalc> docker top dev_esb01
PID          USER        COMMAND
2334         tc          /bin/bash -l
2597         tc          bipservice TESTNODE
2602         tc          bipbroker TESTNODE
2658         tc          bipMQTT -c /var/mqsi/components/TESTNODE/config/TESTNODE -p 11883
2672         tc          DataFlowEngine TESTNODE 6f7e050e-d070-434d-949b-e07237c71e13 service

```

List the mapped ports for the container.

```
> docker port container_name (grumpy_koala)
```

```

/Users/mmalc> docker port dev_esb01
7080/tcp -> 0.0.0.0:7080
7800/tcp -> 0.0.0.0:7800
1414/tcp -> 0.0.0.0:1414
4414/tcp -> 0.0.0.0:4414
6666/tcp -> 0.0.0.0:6666

```

Connect the IIB Web GUI to the running IIB node in the container

First, on Mac OS X there is a small in-memory boot2docker virtual machine (vm) that is used to host the docker daemon etc. We need this ip address before we can send messages to the docker container.

User the boot2docker ip command to find this ip address

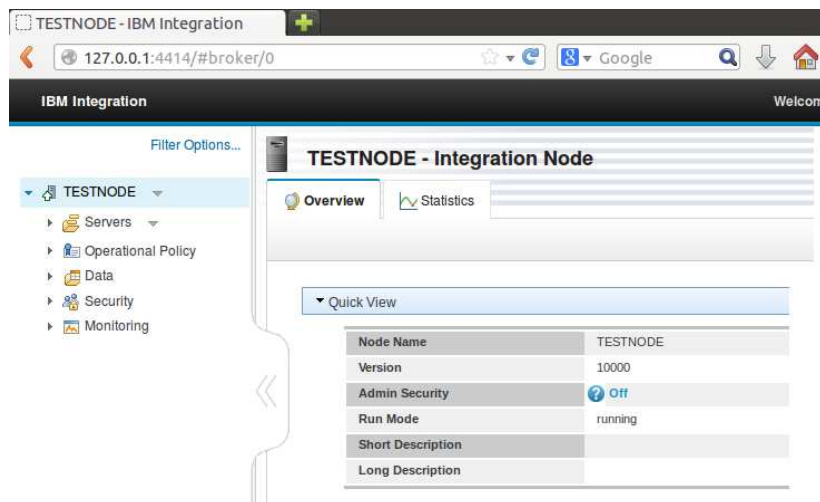
```
> boot2docker ip
```

```

/Users/mmalc> boot2docker ip
192.168.59.103

```

Start your browser and enter the url <http://ipaddress:4414> or <http://127.0.0.1:4414>



Verify the running IIB node in the container

There is a message flow already deployed and running on the IIB Test Node in the IIBDEMO container. The message flow is a simple HTTP echo flow.

Use curl or your favourite tool to send an HTTP post to the message flow.

```
> echo '{"text": "Hello **world**!"}' | curl -d @- http://ipaddress:7800/echo
```

```
/Users/mmalc> echo '{"text": "Hello **world**!"}' | curl -d @- http://192.168.59.103:7800/echo
```

It should respond with

```
{"text": "Hello **world**!"}
```

Stopping the running IIB node and the container

For reference purposes here are the commands for starting and stopping the container.

```
> docker exec -id grumpy_koala "/bin/bash -lc 'iib stop NSW' "
```

```
> docker stop grumpy_koala
```

Re-starting IIB container and the IIB Node

```
> docker start grumpy_koala
```

```
> docker exec -id grumpy_koala /bin/bash -lc 'iib start NSW'
```