

Deploying Parasoft Virtualize with Docker

Introduction

A Parasoft Docker image is a template that includes the Parasoft Virtualize Server, Parasoft Data Repository Server, all required software dependencies (e.g., Apache Tomcat, JRE ...), and default configuration settings for connecting to Parasoft Environment Manager and Parasoft License Server.

To run a Parasoft Docker container, you can either configure a new Docker image or load a preconfigured Docker image. The first strategy involves a smaller download package; the second strategy involves fewer configuration steps.

Prerequisites

Ensure that you meet the system requirements for the Parasoft Container-Deployable Server (Java 7+) and Parasoft Data Repository (Windows 64-bit, specific Linux 64-bit distributions [see User Guide for details], Mac OS X).

Configuring a New Docker Image

With this approach, you configure required connection details in a configuration file, build Docker images, configure port forwarding (Windows only), then run the virtualize Docker image.

1. Download and install the Docker host toolbox as described in <http://docs.docker.com/windows/started/>. This page contains Windows instructions and links to Linux and Mac instructions.
2. Extract the Parasoft Docker-deployable files to a directory of your choice.
3. Launch the Docker Quickstart Terminal and change directory (cd) to the folder where the Parasoft Docker-deployable files were extracted. This folder will contain the following subfolders:

- datarepository
- server-jre8
- tomcat8
- virtualize

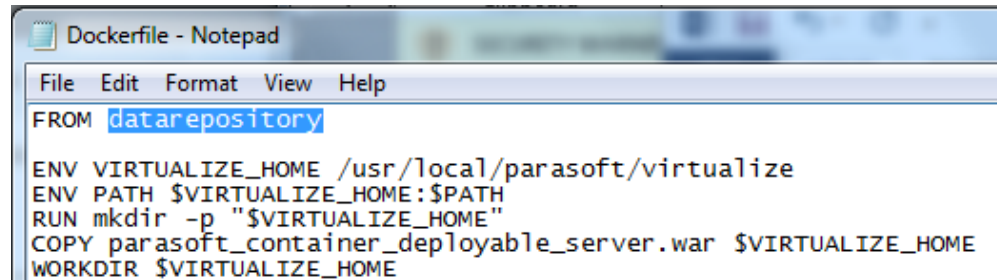
[illegible]

4. Edit the default values for environment variables in the `virtualize/Dockerfile` file. As you edit, note that the `ENV` command declares a new environment variable. The environment variable name and value should be separated by a space.

| | |
|--|---|
| ENV VIRTUALIZE_SERVER_NAME Docker | Specifies the name that should be used to label this server on Environment Manager. |
| ENV ENV_MANAGER_HOST em.parasoft.com | The host name or IP address of the Environment Manager server where this Docker deployable Virtualize server should register when it starts up. To connect to an Environment Manager running on localhost, specify the IP address (e.g., 10.10.255.47) rather than localhost. |
| ENV ENV_MANAGER_PORT 8080 | The port that should be used to connect to Environment Manager. |
| ENV ENV_MANAGER_USERNAME admin | The username that should be used to connect to Environment Manager (if authentication has been enabled). |
| ENV ENV_MANAGER_PASSWORD admin | The password that should be used to connect to Environment Manager (if authentication has been enabled). |
| ENV ENV_MANAGER_NOTIFY true | If true, the Virtualize server notifies Environment Manager when virtual assets are deployed. |
| ENV LICENSE_EDITION custom_edition | The Virtualize license edition to request from the License Server. |
| ENV LICENSE_FEATURES "Server, Validate, Message Packs, Unlimited Hits\Day" | The Virtualize license features to request from the License Server when using a custom edition license. |
| ENV LICENSE_SERVER_HOST ls.parasoft.com | The host name or IP address of the License Server to use for requesting a Virtualize license. |
| ENV LICENSE_SERVER_PORT 2002 | The port to use for connecting to License Server. |

Tip: How to Exclude Data Repository

If you do not want to include Data Repository in the Docker image, change the first line of the virtualize/Dockerfile to `FROM tomcat8` (instead of `FROM datarepository`).



5. Build Docker images for each of the sub folders by executing the following commands in the Docker Terminal *in this order*:

```
docker build -t server-jre8 server-jre8/
```

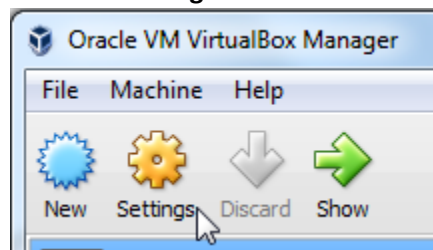
```
docker build -t tomcat8 tomcat8/
```

```
docker build -t datarepository datarepository/
```

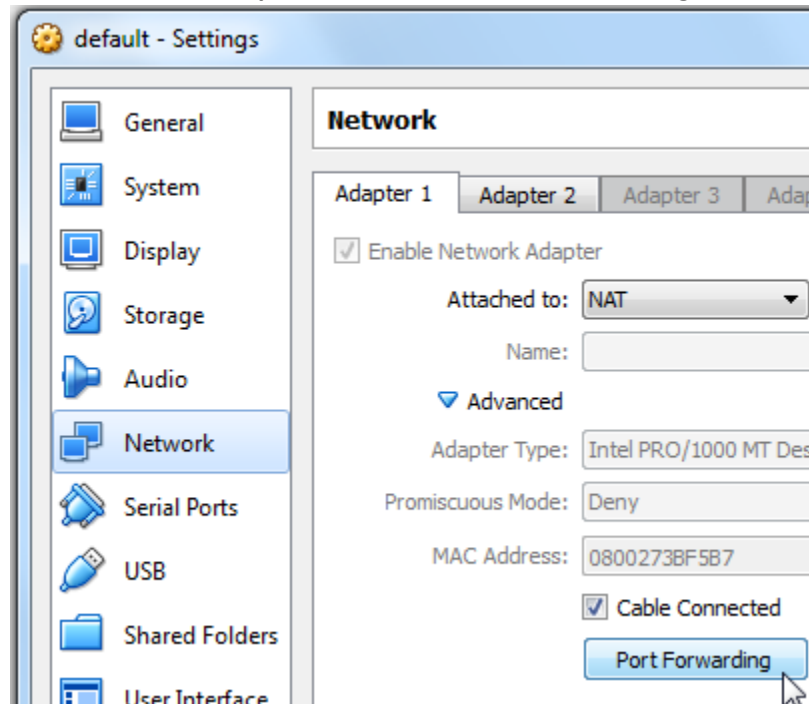
```
docker build -t virtualize virtualize/
```

6. (Windows only) Configure port forwarding for ports 2424 (Data Repository) and 9080 (Virtualize) as follows:

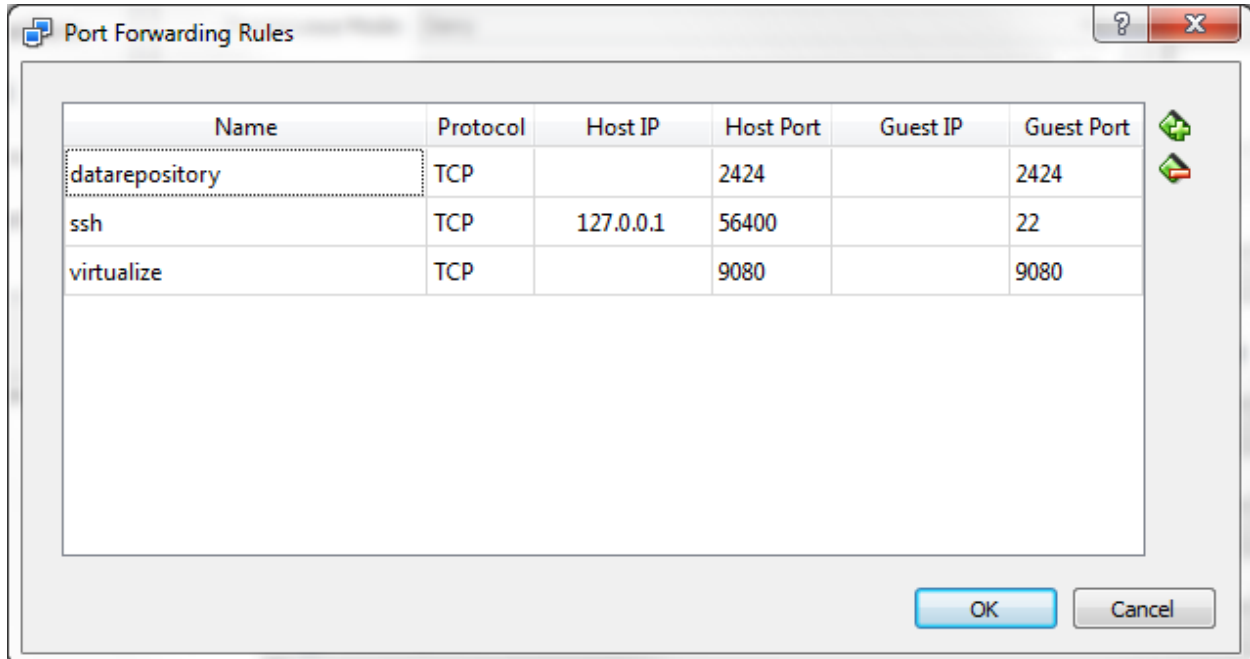
- a. Launch Oracle VM VirtualBox from the Windows Start menu.
- b. Click the **Settings** toolbar button.



- c. Go to **Network> Adapter 1** and click the **Port Forwarding** button.



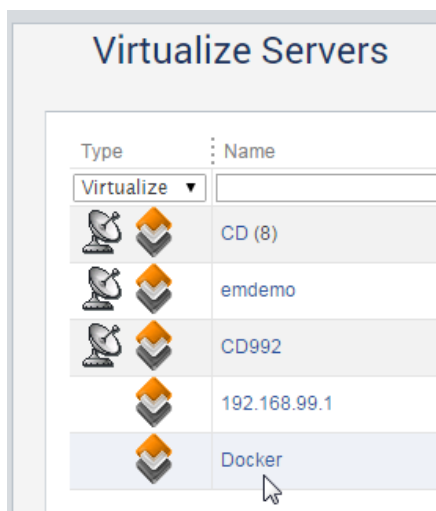
- d. Add new port forwarding rules for datarepository (if using Data Repository) to 2424 and virtualize to 9080. The order does not matter.



7. Run the newly created Docker image by executing a command of the format
`docker run -it --rm -p 2424:2424 -p 9080:9080 virtualize`
 This will start up the Data Repository server and Virtualize server.

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| -it | Makes the running Docker container interactive so it will continue running until you press Ctrl-C in the terminal. |
| --rm | Configures the Virtualize server as a disposable sandbox. Upon shutdown, the Docker container will be removed and discard any changes to the Virtualize workspace or Data Repository. If you want to be able to shut down Virtualize and then pick up where you left off after a restart, omit --rm. |
| -p 2424:2424 | Map port 2424 from the Docker container to port 2424 in the host (for Data Repository). |
| -p 9080:9080 | Map port 9080 from the Docker container to port 9080 in the host (for Virtualize). |

You should now see the Virtualize server listed in Environment Manager and be able to use the Environment Manager web interface to create virtual assets or upload .pva files.



Changing the Configuration

If you want to change the configuration (for example, to use a different Environment Manager or License Server) *without rebuilding the virtualize image*, shut down the running container and follow the procedure for [Loading a Pre-Configured Docker Image](#) below—beginning at step 4.

Alternatively, if you are willing to rebuild the virtualize image, you can update the configuration as follows:

1. Shut down the Docker container (e.g., press Ctrl-C in the terminal).
2. Delete the `virtualize` image as follows:

- a. At the Docker terminal, enter the command
`docker images`
 - b. Note the ID of the `virtualize` image.
 - c. Remove that image by entering the command
`docker rmi <virtualize image id>`
3. Edit the `virtualize/Dockerfile` file as desired.
4. Rebuild from the base folder in the Docker terminal by entering the command
`docker build -t virtualize virtualize/`

Loading a Pre-Configured Docker Image

With this approach, you load a preconfigured Docker image, then specify required connection details in the run command.

If you have already created a new Docker image as described in [Configuring a New Docker Image](#) and want to change the configuration without rebuilding the image, you can use step 4 in this procedure to override the defaults that were preconfigured in the `virtualize` image. Be sure to shut down the running container (e.g., via Ctrl-C) before you execute the new run command.

1. If you have not already done so, download and install the Docker host toolbox as described in <http://docs.docker.com/windows/started/>. This page contains Windows instructions and links to Linux and Mac instructions.
2. Launch the Docker Quickstart Terminal and change directory (`cd`) to the folder where the Parasoft Docker deployable image (`parasoft_docker_deployable_server_image.tar`) was downloaded.

3. Load the Docker image from the tar file. In the Docker terminal, type:

```
docker load -i parasoft_docker_deployable_server_image.tar
```

Wait for this to complete before proceeding to the next step; this may take several minutes. Once it completes, the `Virtualize` image is ready to run.

4. Override environment variables in the run command using the `-e` option and environment variable name and value, separated by an equals sign. For example:

```
docker run -it --rm -p 2424:2424 -p 9080:9080 -e ENV_MANAGER_HOST=em.acme.com -e ENV_MANAGER_PORT=8080 -e LICENSE_SERVER_HOST=ls.acme.com virtualize
```

or

```
docker run -it --rm -p 2424:2424 -p 9080:9080 -e ENV_MANAGER_HOST=10.10.255.47 -e ENV_MANAGER_PORT=8080 -e LICENSE_SERVER_HOST=license.parasoft.com virtualize
```

| |
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| Tip: Learning More About Options and Environment Variables |
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Options (-it, --rm, -p) and environment variables (ENV_MANAGER_HOST, ENV_MANAGER_PORT...) are described in the tables in [Configuring a New Docker Image](#).

You should now see the Virtualize server listed in Environment Manager and be able to use the Environment Manager web interface to create virtual assets or upload .pva files.

