

CONTAINERIZING BANNER WITH DOCKER

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SIG

Presenter



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SIG Introduction



Industry Commitment

SIG was established in 1987 serving higher education with IT initiatives that enhance services for students, faculty, staff and alumni.



Consulting Continuity

Powered by more than 100 professionals, with an average tenure of 9.5 years, SIG can provide consulting continuity to keep your goals on task.



Ellucian® Partner

SIG is one of the largest privately held higher education consulting firms in the U.S., and we have been a long-standing partner with Ellucian for many years.



Agility to Respond

SIG provides a full lifecycle of services from strategy through managed services, and our ability to move quickly is what we do best. We can respond to uncertainty with flexibility as new opportunities arise.

More than
100
People

More than
35
Years Serving
Higher Education



Agenda

- Audience - Beginners
- Learn a bit about containers
- Verify Workstation preparation
- Create some images
- Lunch
- Finish creating images
- Create Banner application
- Pat yourself on the back and plan your next vacation



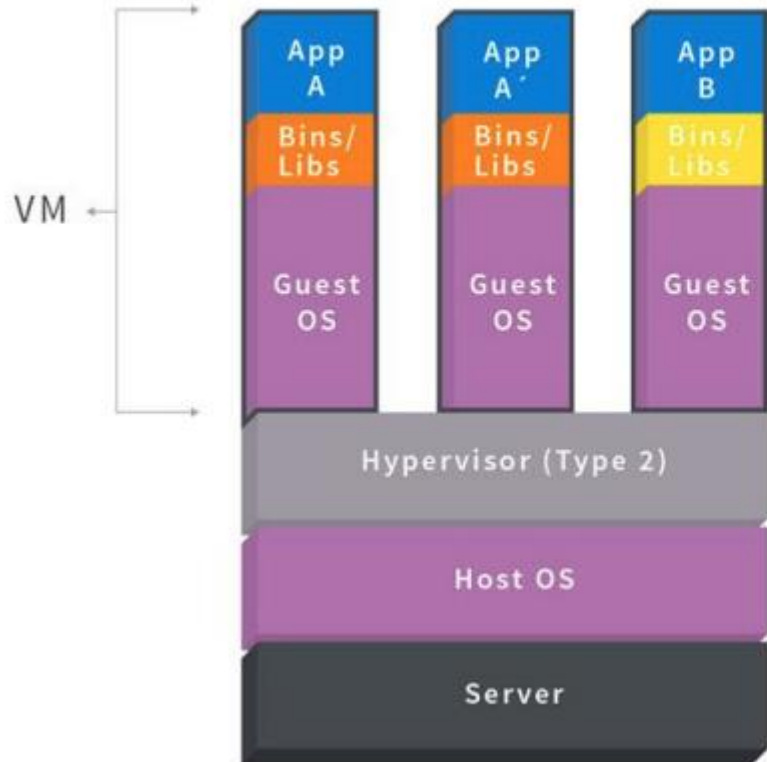
Terminology

- Image
- Container
- Registry Service
 - Docker Hub, OCI Registry, AWS ECR
- Repository
 - Local or remote
- Layer
- Dockerfile

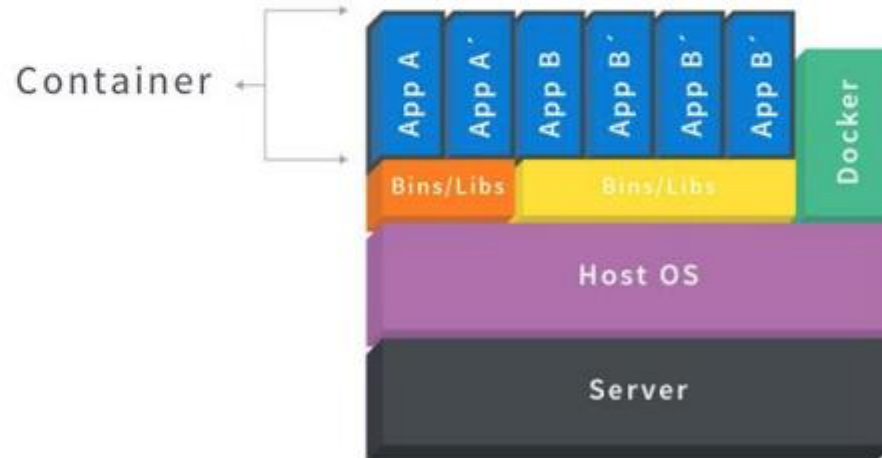


What is a Container?

Containers vs. VMs



Containers are isolated, but share OS and, where appropriate, bins/libraries



What is an Image?

- Read-only template
- Set of instructions
 - Creates layers
 - Layers can be shared between images – i.e. cached layers
- Used to build the container
- Immutable – can't be changed once created
 - Destroy or create a new version (i.e. a tag)
 - Can have multiple tags
- Images themselves do not run
- Images can be built from other images



Basic Commands

- docker ps
- docker stats
- docker exec
- docker build
- docker run
- docker pull/push
- docker rm
- docker rmi
- docker images



Why use containers?

- Why NOT?
- Self-contained
- Replicate them easily
- Improve operational efficiency
- Better resource management (CPU, memory, etc)
- Codable, auditable environment





**If It Isn't Codified, It
Doesn't Exist**



Codifying the Infrastructure

- Avoids configuration drift / undocumented changes
 - Self documenting
 - Mitigates issues with configuration differences
 - Application Health (performance differences, inconsistent behaviors, etc.)
 - Security
 - Regulatory Compliance
- Improves ability to make changes quickly
 - Centralized configurations and classifications (modify once in definition)
 - Reusable definitions (build common configurations)
- Repeatable
 - Disaster Recovery (rebuild fast)
 - Scalability (apply reusable definitions to multiple hosts)
- Auditable (change management & tracking, who-what-when)



How are containers codified?

- Dockerfile
 - Instructions to build the container
 - List of commands that typically run at the command line
- Common commands
 - ADD
 - COPY
 - ENV
 - EXPOSE
 - FROM

```
FROM tomcat:8.5-jdk8-openjdk  
  
ENV APP_LOGS=/app_logs  
  
RUN rm -Rf $CATALINA_HOME/webapps.dist  
  
EXPOSE 8080
```



Adding Additional Scripting

- If there's a need to do more advanced scripting than what can be done in a Dockerfile, write it.

- Bash
- Ansible
- Python
- Whatever

In the run.sh

CMD /run.sh

In the Dockerfile

```
#  
# Update server.xml  
#  
if [[ -f "/tmp/resource_${varprefix}.sed" ]]; then  
    rm /tmp/resource_${varprefix}.sed  
fi  
cat <<EOF > /tmp/resource_${varprefix}.sed  
s|jdbcDataSource|${!jndivar}|  
s|jdbcUrl|${!urlvar}|  
s|datasourceUser|${!uservar}|  
s|datasourcePswd|${!pswdvar}|  
EOF
```

A woman and a man are shown from the chest up, leaning over a desk and looking at a laptop screen. The woman is on the left, pointing at the screen, and the man is on the right, looking at the screen. The image is overlaid with a solid blue color.

Let's Get Started!



Workshop Pre-Reqs

- Tools that will be used during the workshop
 - Windows Subsystem for Linux 2 (WSL2)
 - Ubuntu Linux
 - Docker Desktop for Windows
 - <https://docs.docker.com/desktop/install/windows-install/>
 - Mac users should be able to just install Docker Desktop
 - Visual Studio Code (VS Code)
 - <https://code.visualstudio.com/download>
 - Docker Hub
 - <https://hub.docker.com/>
 - Github
 - <https://github.com/>
- Ready?



Download Workshop files

- Open VS Code
 - Start a Terminal session
 - Create a directory for this workshop somewhere on your machine and then go to it (i.e. mkdir, cd)
 - git clone [git@github.com:gillfimj/coHEsion2022.git](https://github.com/gillfimj/coHEsion2022.git)
- What's in the repo?
 - Markdown files
 - PDFs
 - Possibly a few extras at the end of the workshop
 - git pull






QUESTIONS

Contact


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 /strata-information-group

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A blue-tinted photograph of three young women walking through a hallway with arches. The woman on the left is wearing a dark top and light pants. The woman in the center is wearing a light blazer and pants. The woman on the right is wearing a light top and dark pants, carrying a bag. The text 'THANK YOU' is overlaid in the center.

**THANK
YOU**