

SAS[®] GLOBAL FORUM 2019

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APRIL 28 - MAY 1 | DALLAS, TX



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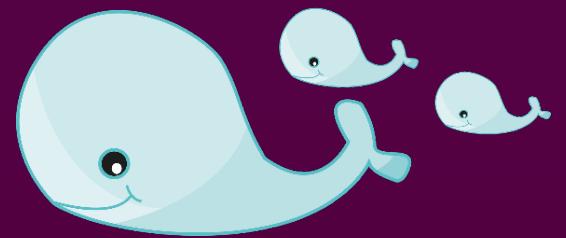
SAS® and Containers

State of the Union 2019

Paul.Kent@SAS.COM



@hornpolish



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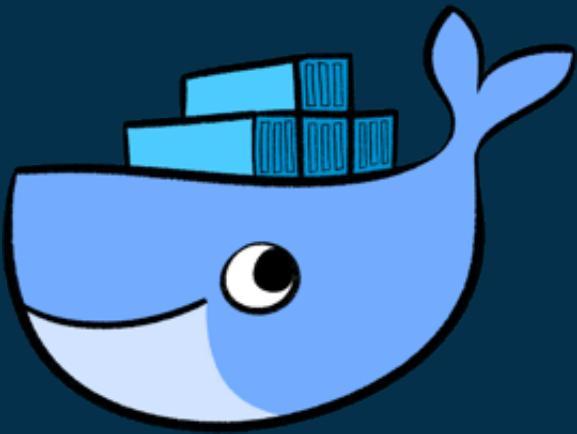
Agenda

Containers
Immutable
Docker

SAS and Containers

Example / Demo

2018



Goals

Brief Introduction to
containers

Why it matters to
customer infrastructure

How it relates to SAS

Get you Curious!

Agenda

Containers
Immutable
Docker

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Example / Demo

Goals

Brief Introduction to containers

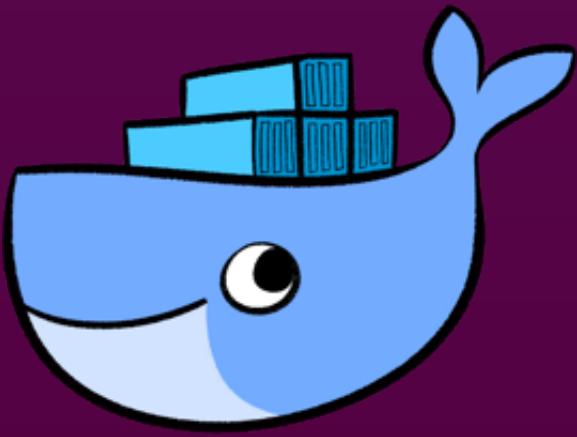
Why it matters to customer infrastructure

How it relates to SAS

Get you Curious!

Going!

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"why containers"

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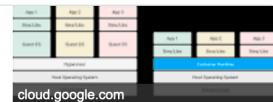
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That's because **containers** can be run in lightweight virtual machines to increase isolation and therefore security, and because hardware virtualization makes it easier to manage the hardware infrastructure (networks, servers and storage) that are needed to support **containers**. Jun 27, 2017



What are containers and why do you need them? | CIO

<https://www.cio.com/article/.../what-are-containers-and-why-do-you-need-them.html>

About this result Feedback

People also ask

What are the benefits of containers?



Why are containers better than VMs?



What are containers in cloud?



What is Docker container used for?



Feedback

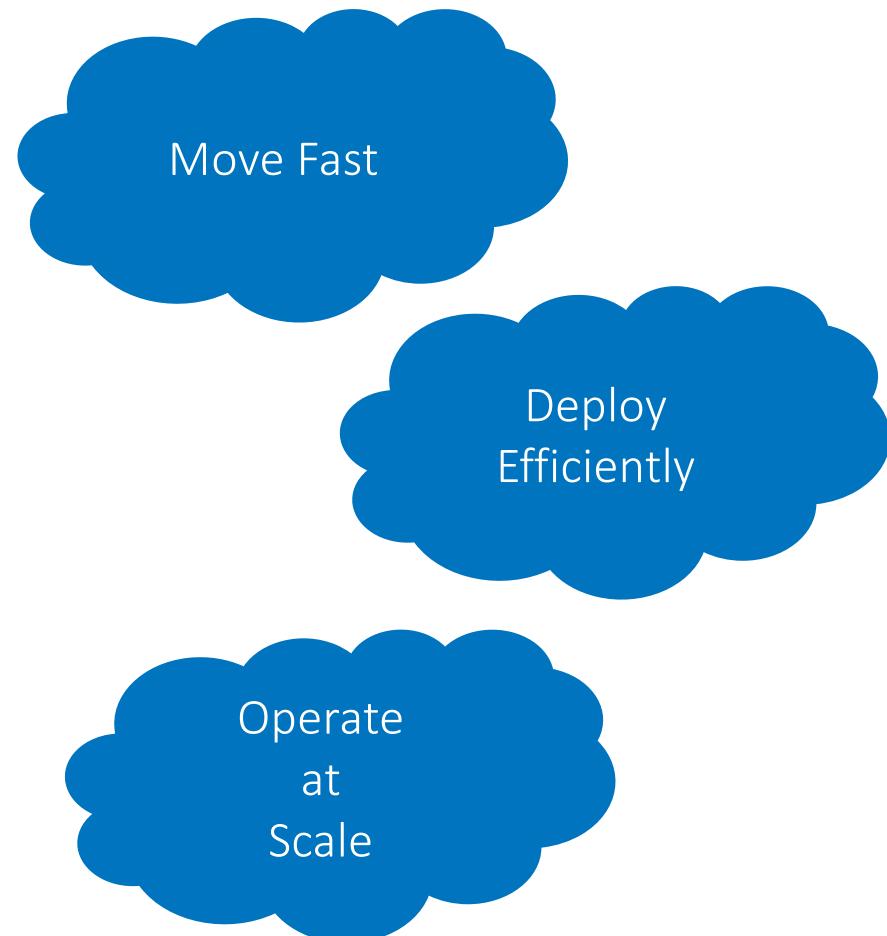
What are Containers and their benefits | Google Cloud

<https://cloud.google.com/containers/>

Containerization allows our development teams to move fast, deploy software efficiently, and operate at an unprecedented scale. ... Like virtual machines, **containers** allow you to package your application together with libraries and other dependencies, providing isolated environments for running your software services.

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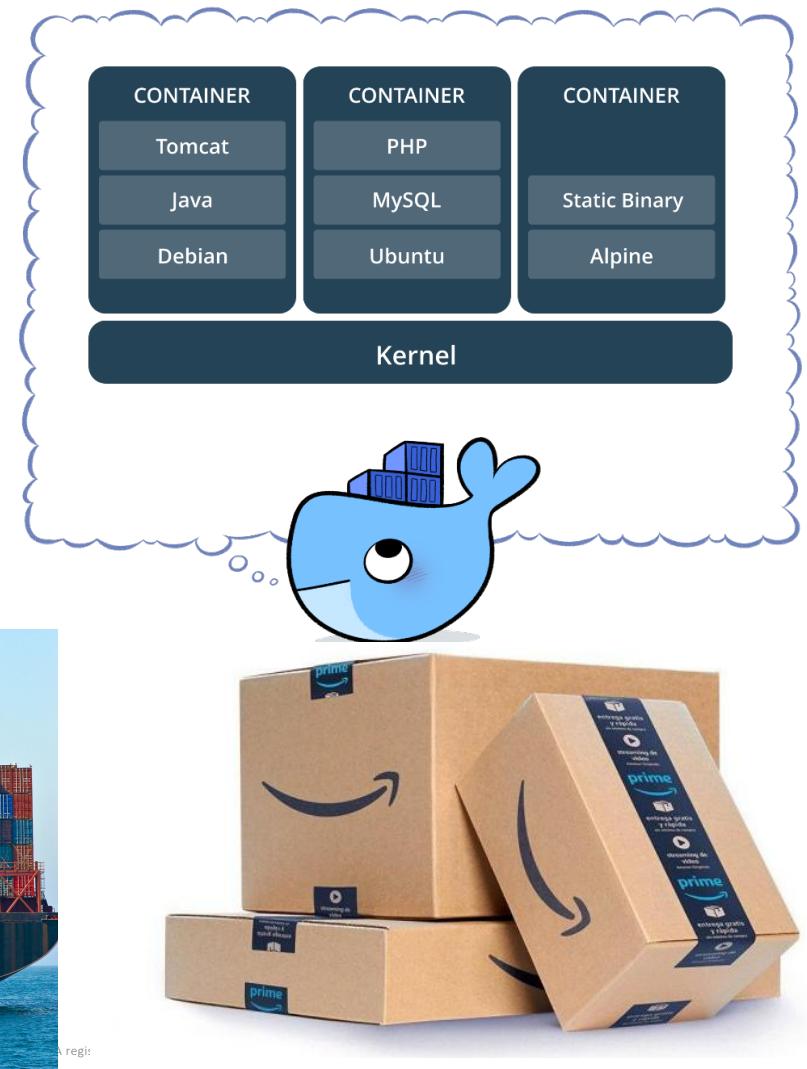
Why Containers

- Standard “shape”
- Very different contents
- All on one OS (ship)

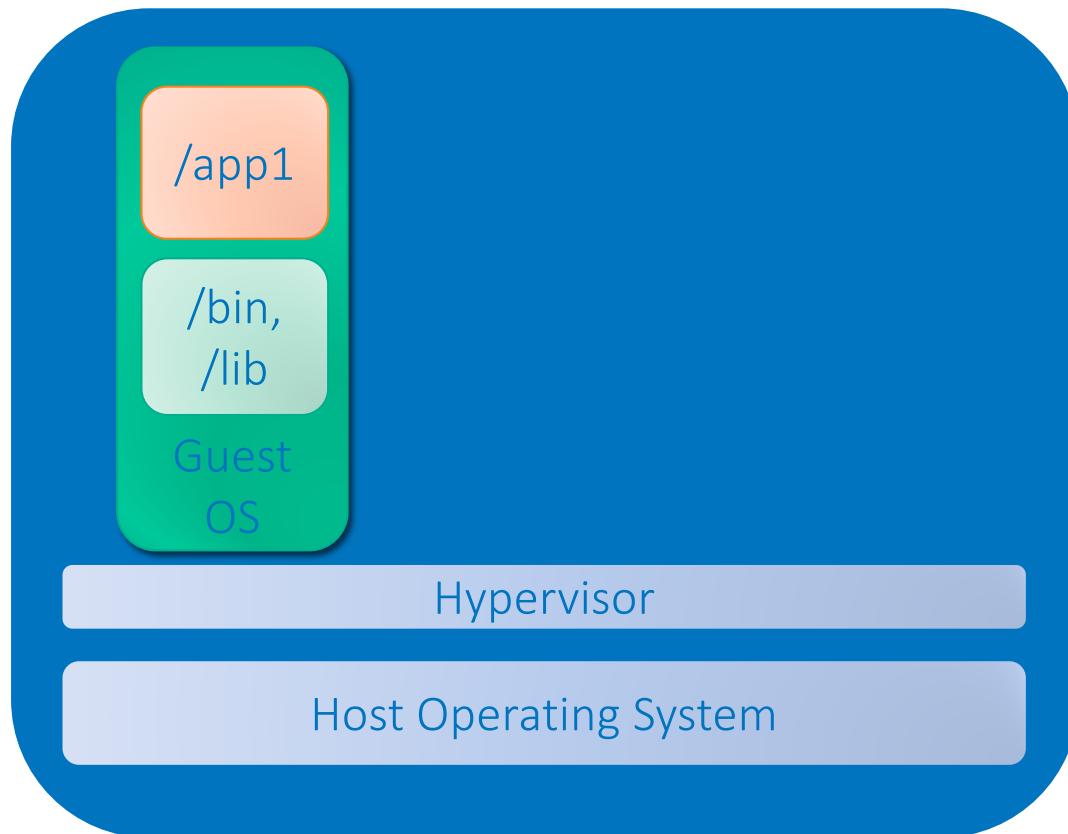


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Didn't we call those VM's?

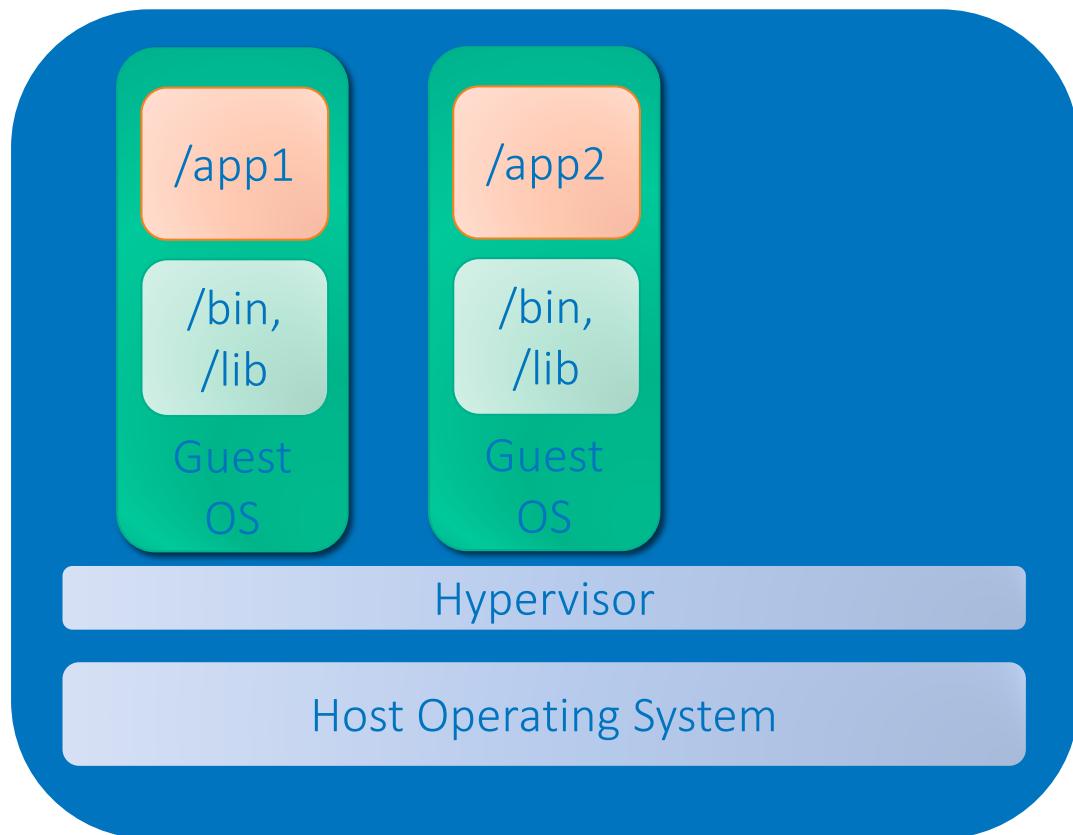


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Didn't we call those VM's?

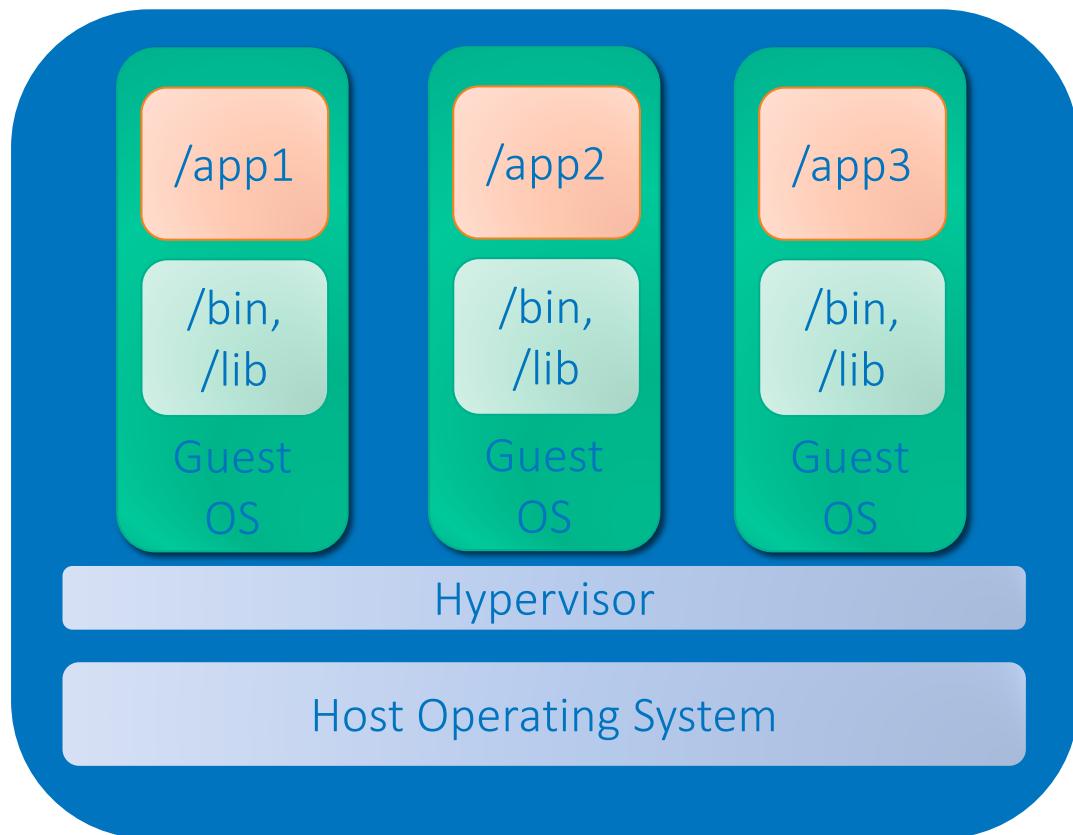


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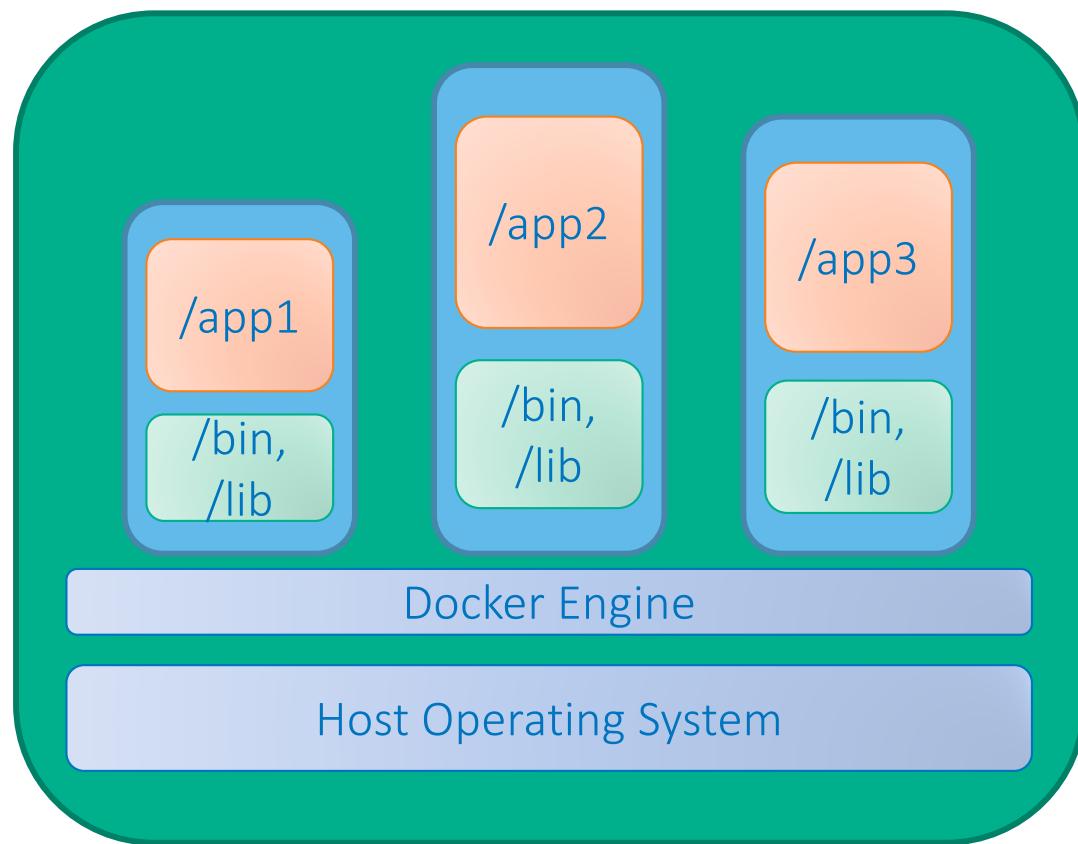
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Didn't we call those VM's?



Nope Containers are different



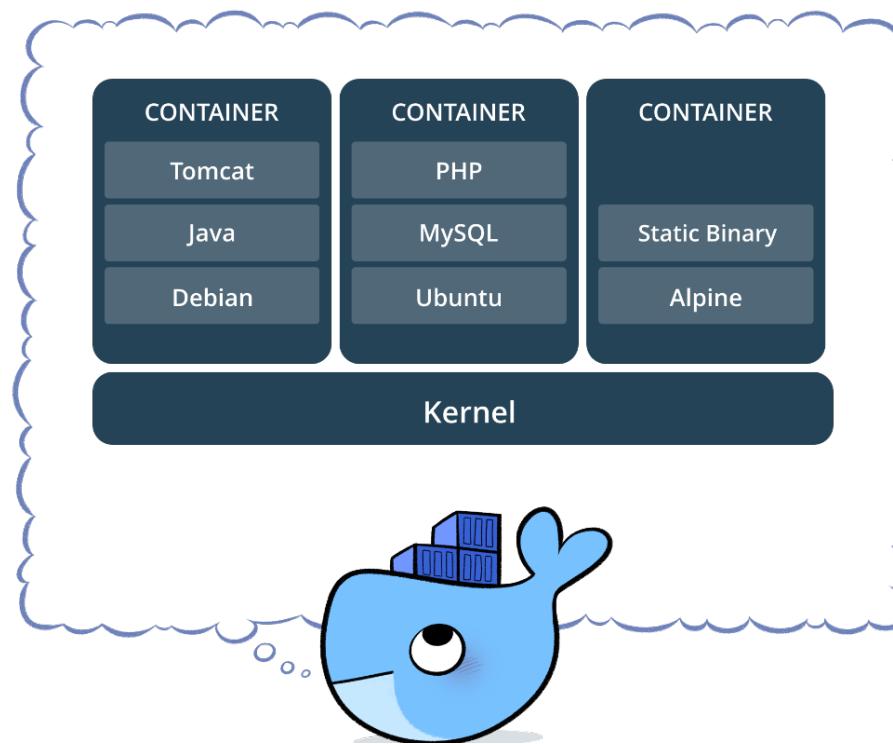
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Tour WhaleSay

docker-build-run-push-and-pull



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```
#docker run docker/whalesay cowsay Hello there!
```

```
$docker run docker/whalesay cowsay Hello there!
-----
< Hello there! >
-----
      \
      \
      \
          ##      .
          ## ## ##      ==
          ## ## ## ##      ===
          /"*****"__/_/ ===
~~~ {~~ ~~~~ ~~~ ~~~~ ~~ ~ /  ===- ~~~
      \----- o      _/
          \   \      _/
              \_\_/_/
```

```
FROM docker/whalesay:latest  
RUN apt-get -y update && apt-get install -y fortunes  
CMD /usr/games/fortune -a | cowsay
```

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#SASGF

Containers are Good at Evolution!



Cupcake-1.0



Cupcake-1.1



Cupcake-2.0

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Agenda

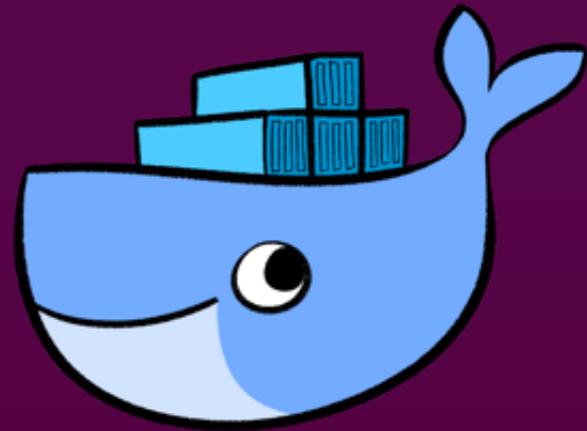
Containers

Immutable

Docker

SAS and Containers

Example / Demo



Enterprise Guide in a Container?

- Maybe?
 - but EG runs on windows
 - EG is a “display application”
 - EG “submits” work to the SAS workspace

SAS Studio in a Container?

- Now you are talking
- SAS Studio is a web application, runs on linux
- SAS Studio submits its work to the SAS workspace process, and displays the results

SAS Viya in a container?

- Only one container.
 - Oooof, that might be a Big One!
- But many containers might could work.
 - micro services
 - cas controllers
 - cas workers
 - compute/workspaces



kubernetes

The Three Steps

Step 1

- A Basic Container for a Data Scientist
 - Jupyter (Python)
 - Rstudio (R)
 - SAS Studio (SAS)

Step 2

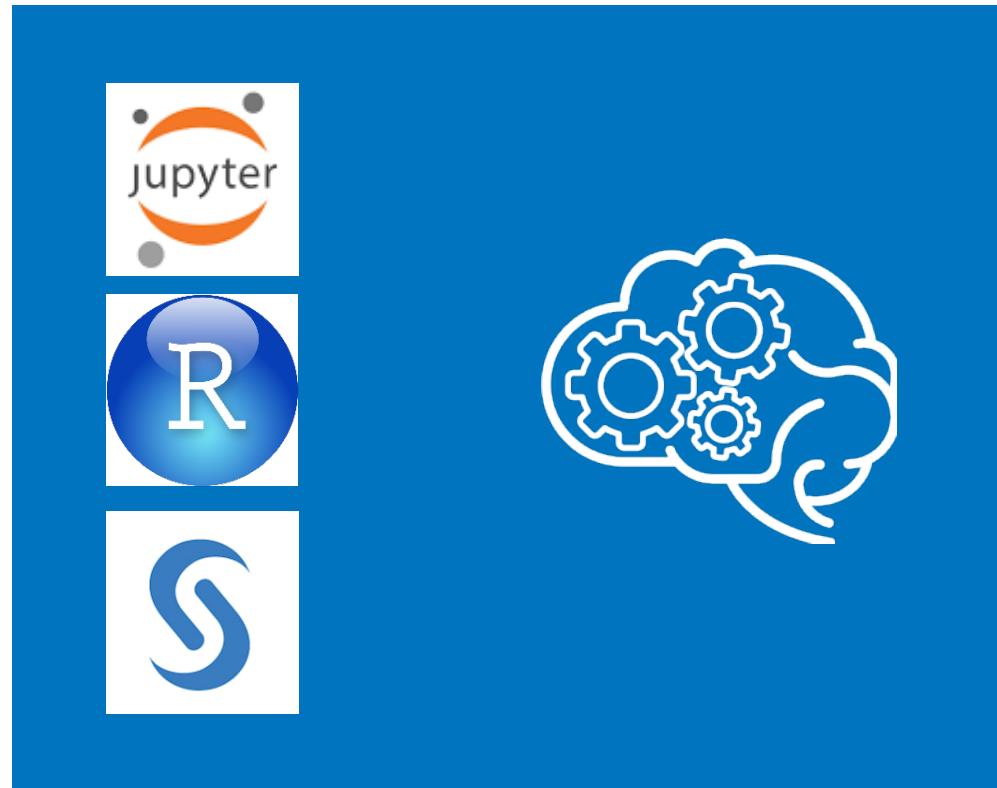
- Scale out the Engine
 - CAS in many containers

Step 3

- Full Stack Viya
 - All the micro services and Visual Applications
 - CAS in many containers
 - Orchestration becomes important
 - Cloud Foundry and Kubernetes and ...

Step 1

All in One Container – Runs on MAC/WIN/Linux/Cloud



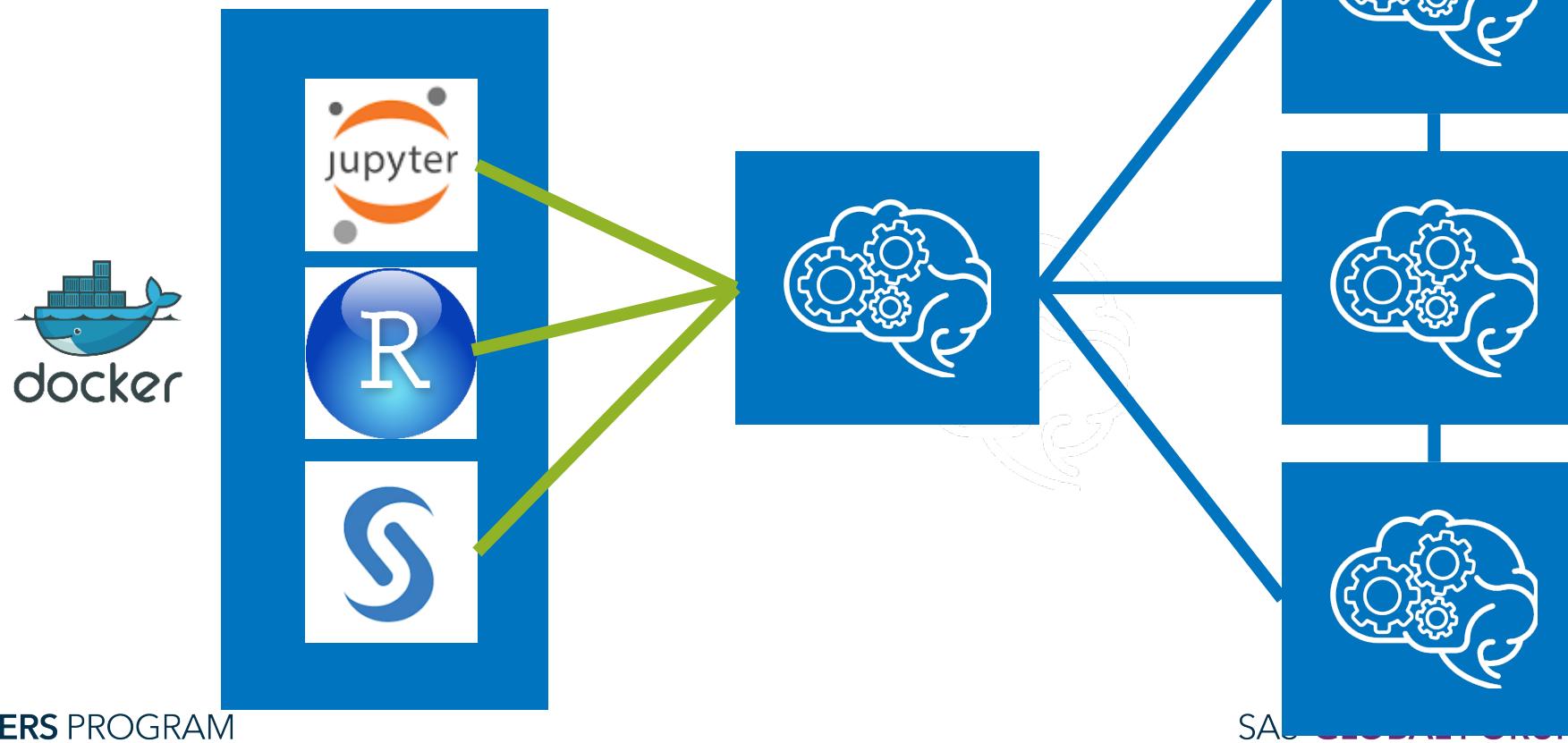
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Step 2

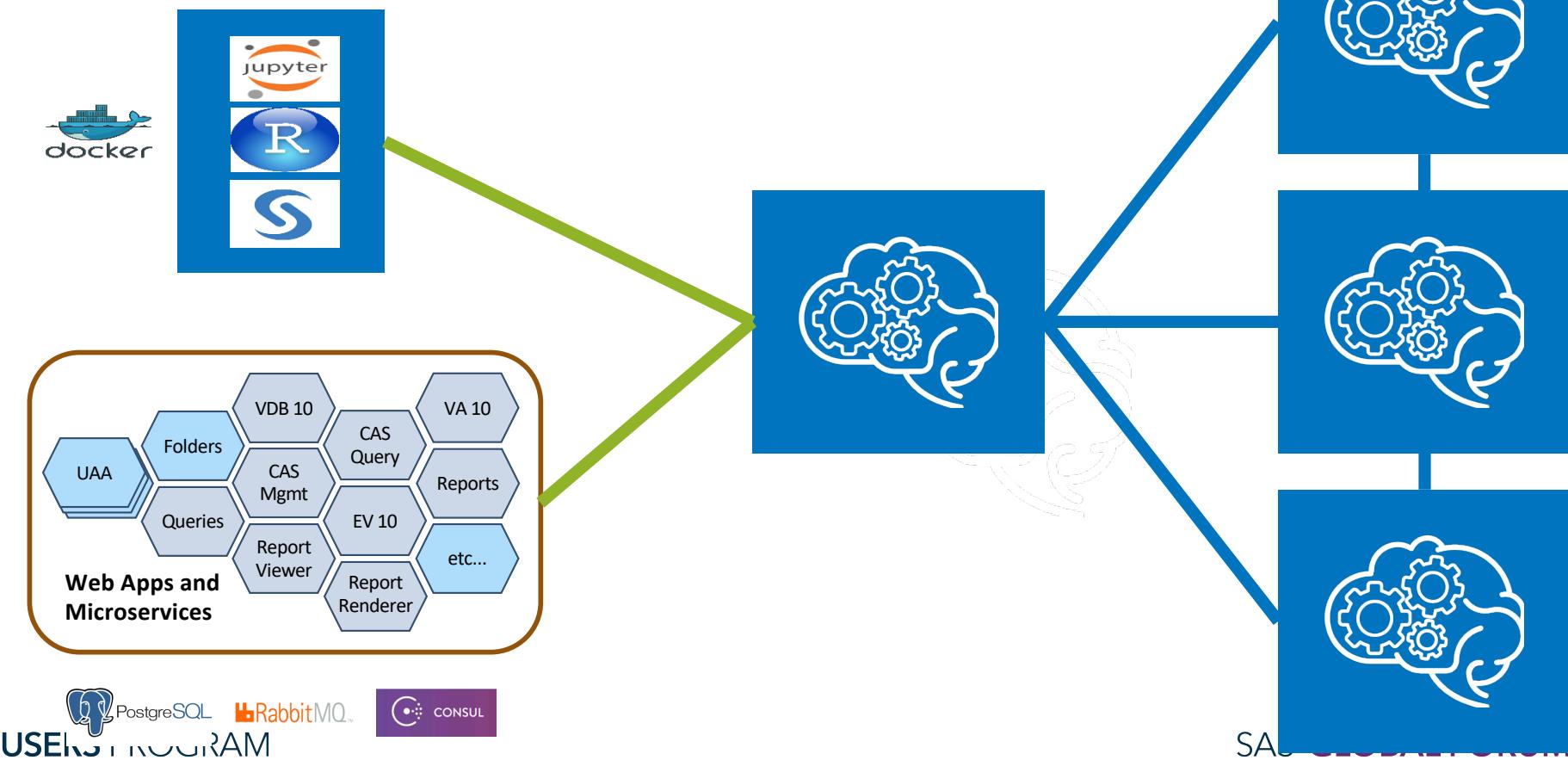
Scale Out the Backend CAS Engine



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Step 3

Full Stack Viya (Visual Analytics & Co)



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Is this Interesting?

- Run SAS Programming Environment on your Macbook? Laptop?
- Deploy Quickly using Cloud Scale
 - 2mins – Kubernetes Manifests created and uploaded to Kube API
 - 10mins – Login and Go
 - (soon) Scale effortlessly up/down as needs flex
- Load Larger Common datasets once, and share amongst analysts
- Boot “On Demand” Instances
 - for departments
 - for projects
 - for DEV / TEST / PROD
- Drive Up Compute Utilization Density on your Hardware!

2

0

1

8

GitHub, Inc. (US) https://github.com/hornpolish

Search or jump to... Pull requests Issues Marketplace Explore

Overview Repositories 6 Projects 0 Stars 0 Followers 21 Following 3

Popular repositories Customize your pins

docker.sas.awb Archived
The SAS Viya Programming Environment in one container, in the style of an Analytics Work Bench. Presented at SAS Global Forum 2018.
Jupyter Notebook ★ 4 1

docker-elk
Forked from deviantony/docker-elk
The ELK stack powered by Docker and Compose.
Shell ★ 1

hecate
Forked from evanmiller/hecate
The Hex Editor From Hell!
Go

sas-container-recipes
Forked from sassoftware/sas-container-recipes
A collection of recipes for containers of the SAS Viya Programming Environment. "all-in-one" is in the style of an Analytics Work Bench with all tools in one container. Presented at SAS Global Forum 2018.
Jupyter Notebook

41 contributions in the last year Contribution settings ▾

May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr

Mon

Wed

Fri

Learn how we count contributions.

Less More

SAS Software
Open Source from SAS Software
Cary, North Carolina, USA | https://www.sas.com | github@sas.com | Verified

Repositories 114 | **People** 80 | **Teams** 35 | **Projects** 0

Pinned repositories

- python-dlpy**
The SAS Deep Learning Python (DLPy) package provides the high-level Python APIs to deep learning methods in SAS Visual Data Mining and Machine Learning. It allows users to build deep learning model...
Python 99 ⭐ 48
- sas-container-recipes**
A collection of recipes and other resources for building containers that include SAS Viya software.
Shell ⭐ 18 ⚡ 12
- saspy**
A Python interface module to the SAS System. It works with Linux, Windows, and mainframe SAS. It supports the sas_kernel project (a Jupyter Notebook kernel for SAS) or can be used on its own.
Python 161 ⭐ 73

- sas-viya-programming**
Code samples and materials to help you learn to access SAS Viya services by writing programs in Python and other open-source languages
Jupyter Notebook ⭐ 76 ⚡ 78
- sas-prog-for-r-users**
Teaching and lab materials for the "SAS Programming for R Users" course, including course notes, data, and code.
SAS ⭐ 91 ⚡ 42
- python-swat**
The SAS Scripting Wrapper for Analytics Transfer (SWAT) package is the Python client to SAS Cloud Analytic Services (CAS). It allows users to execute CAS actions and process the results all from Py...
Python ⭐ 71 ⚡ 30

Find a repository... | Type: All | Language: All

2019

New!
Improved!

Open
Source
@ SAS

#SASGF

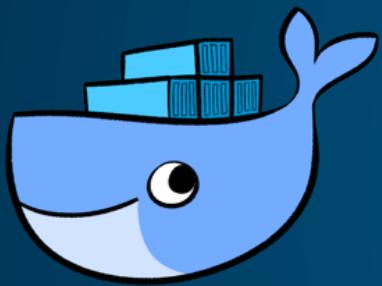
<https://github.com/sassoftware/sas-container-recipes>

The screenshot shows a GitHub repository page. At the top, there's a navigation bar with various icons and links. Below it is the main header with the repository name "sassoftware / sas-container-recipes". To the right of the name are buttons for "Unwatch" (with 18 notifications), "Star" (with 18 stars), and "Fork" (with 12 forks). Below the header, there are tabs for "Code", "Issues 3", "Pull requests 0", "Wiki", "Insights", and "Settings". The "Code" tab is selected. The main content area contains a brief description: "A collection of recipes and other resources for building containers that include SAS Viya software. <https://www.sas.com>". Below the description are several buttons for topics: "sas-viya", "sas-studio", "docker-image", "cas-server", "docker-registry", "kubernetes", "analytics", "sas", "build-tools", "dockerfile", and "sas-containers". There's also a "Manage topics" link. At the bottom, there are summary statistics: "1,665 commits", "1 branch", "8 releases", "1 environment", "9 contributors", and a license badge for "Apache-2.0".

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@me y'all !

paul.kent@sas.com



kubernetes



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sas

A photograph of the Dallas skyline at night, reflected in a body of water in the foreground. The Reunion Tower is visible on the left, and various skyscrapers are illuminated with colorful lights. The sky is dark with some clouds.

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Kay Bailey Hutchison Convention Center

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