Meetup: Docker Grenoble

“DockerConEU and new tooling“

Michael Bright, 26th Feb 2019
Agenda

• DockerConEU 2018 Announcements
• Top Sessions
• New & evolved tools
• Docker-ce 18.09.2 Release
• Docker 6th Birthday: Show & Tell
• DockerCon SF, April 29 – May 2 2019
DockerConEU 2018 Announcements

- Docker Desktop Enterprise
- CNAB: docker-app, duffle
- compose-on-Kubernetes
- docker-assemble
DockerConEU 2018 Announcements
Docker Desktop Enterprise

- New Commercial Desktop Product
- Creating production-ready container solution in a secure way
- Configurable Version Packs
  - App Designer UI
- Company-provided application templates
- Packaged as standard MSI
- Lockable settings via policy files
- Present developers with customized and approved application templates, ready for coding
DockerConEU 2018 Announcements

Docker Desktop Enterprise

Allows selection of the docker-engine version
DockerConEU 2018 Announcements
Docker Desktop Enterprise
Includes Application Designer Templates
DockerConEU 2018 Announcements
Docker Desktop Enterprise

Development via CLI or GUI

Let's get you started by creating an application.

Choose a template  Custom application

MyApp
DockerConEU 2018 – Top Sessions

1. Dockerfile Best Practices
2. Program the Cloud Using Containers as the Building Block
3. From Monolith to Microservices
4. Provisioning & Managing Storage for Docker Containers
5. Monitoring & Debugging Containerized Systems at Scale

Slides mostly at: [https://www.slideshare.net/docker](https://www.slideshare.net/docker)
DockerConEU 2018 – Top Sessions

Dockerfile Best Practices

Tibor Vass
Docker, Inc.
@tiborvass

Sebastiaan van Stijn
Docker, Inc.
@thaJeztah
Pulumi demo

https://github.com/swgillespie/dockercon18
DockerConEU 2018 – Top Sessions

From Monoliths to Microservices
JEFF NICKOLOFF
Founder, Topple
DockerConEU 2018 – Top Sessions

Provisioning & Managing Storage for Docker Containers

Anusha Ragunathan
Docker Inc
@AnushaRagunatha

Anshul Pandir
Docker Inc
@anshulpandir
monitoring and debugging containerized systems

Jaana B. Dogan, Google
jbd@google.com
New tools: CNAB: Docker-app, Duffle

- CNAB: new application format
  - Duffle – CNAB tool
  - Docker-app
- Docker-assemble
New packaging format: CNAB

- CNAB: Cloud Native Application Bundles - A new application format, developed and simultaneously announced by Microsoft
New packaging format: CNAB

No single solution for defining and packaging these Multi-service, Multi-format distributed applications.

- Composite APIs (ARM, Terraform) & Tooling
- Low Level APIs (JSON, REST API)
- Primitives (VMs, Containers, Storage)
New packaging format: What is CNAB?

New open source package specification created by Microsoft & Docker for Bundling, Installing & Managing Distributed Apps

Manage distributed apps lifecycle via single installable file & toolset, reliably provision resources in different environments.

Cloud agnostic - from Azure to on-prem OpenStack, from Kubernetes to Swarm, and from Ansible to Terraform

https://cnab.io
New tools: CNAB - duffle

An open source reference implementation of a CNAB CLI tool to install & manage CNAB bundles

Package and unpackaged distributed apps for deployment on whatever cloud platforms and services you use

Can create new bundles, sign and verify their integrity

As a reference implementation, it provides an example of how you can build CNAB-based solutions.

https://duffle.sh
https://github.com/deislabs/duffle
Microsoft & Docker plan to donate CNAB to an open source foundation in 2019.

https://github.com/docker/app
“CNAB: Packaging for Distributed Applications with Multiple Toolchains” video
The first implementation of the spec is an experimental utility called **Docker App**, officially rolled out at Dockercon.

Expected to be integrated with Docker Enterprise in near future

Video: “CNAB: Packaging for Distributed Applications with Multiple Toolchains”

https://github.com/docker/app
New tools: CNAB – docker-app demo

https://github.com/garethr/docker-app-cnab-examples
Resources for docker-app

http://collabnix.com/how-i-built-elastic-stack-using-docker-application-packagedocker-app/

https://collabnix.com/a-first-look-at-docker-application-package-docker-app/

http://collabnix.com/building-helm-chart-for-kubernetes-cluster-running-on-docker-enterprise-2-0-using-docker-app-0-6-0/

https://github.com/docker/app
New tools: docker-assemble

Generates optimized config & images from non dockerized apps

Enterprise feature for now — NOT in the community version.

Analyzes app, dependencies & creates Docker image without authoring Dockerfiles (for Java and others today).

Built on top of BuildKit

Auto detects framework, versions etc. from a config file (.pom file
BuildKit
BuildKit is a Moby Project, which has been under development for some time.

Next-gen ‘docker build’ engine, with full backward Dockerfile compatibility, experimental in docker-ce 18.09 ...

... now available by default in docker-ce 18.09.2
BuildKit

Problems it addresses
• Maintaining multiple compose files for different environments
• Difficult to share multi-service applications
• Hard to collaborate around a compose file

vs Buildpack - more than just an image (also ports, healthchecks, volume mounts, etc), and integrated into the enterprise toolchain
BuildKit

BuildKit allows faster & more powerful build scenario
- Volume mounts during multi-stage builds
  - Allows smaller build artifacts
- Secrets management
- Ssh connection
- Take artifacts FROM multiple parallel builds
- New build-cache storage
  (docker system df; docker builder prune)

@tonistiigi
BuildKit supports multiple front ends
- Dockerfiles
- BuildPacks
- Docker-assemble

@tonistiigi
BuildKit brings new features to Docker 18.09

The ‘--mount’ option on Dockerfile RUN enables mounting of:
- external target directory avoiding unnecessary COPY
- Secrets to securely pass them to the build
- Ssh forwarding allowing use of keys from build
- cached mountpoints, shareable across builds
- # syntax = repo/image.tag allows alt. build FE
New tools: BuildKit demo
Docker-compose for Kubernetes
Docker-compose for Kubernetes

Use `docker-compose` to build & test locally on Swarm or Kubernetes

Use ‘deploy stack’ to Swarm or Kubernetes for Production

Implemented as a ‘Compose Controller’

https://github.com/docker/compose-on-kubernetes
Docker-compose for Kubernetes

Docker/kubectl clients → Kubernetes API server → Compose API server

Compose Controller → etcd

https://github.com/docker/compose-on-kubernetes
https://github.com/docker/compose-on-kubernetes/blob/master/docs/architecture.md
New tools: Compose on Kubernetes demo

https://github.com/docker/compose-on-kubernetes
References

Compose on Kubernetes Guides exist for
• Azure AKS
• Google GKE
• MicroK8S
• Minikube

It is also integrated into Docker Desktop

https://github.com/docker/compose-on-kubernetes/tree/master/docs
Docker-ce 18.09.2
Server: Docker Engine - Community
Engine:
  Version: 18.09.2
  API version: 1.39 (minimum version 1.12)
  Go version: go1.10.6
  Git commit: 6247962
  Built: Sun Feb 10 03:42:13 2019
  OS/Arch: linux/amd64
  Experimental: false

If you would like to use Docker as a non-root user, you should now consider adding your user to the "docker" group with something like:

```
  sudo usermod -aG docker robertsingh181
```

Remember that you will have to log out and back in for this to take effect!

** WARNING: Adding a user to the "docker" group will grant the ability to run containers which can be used to obtain root privileges on the docker host. Refer to https://docs.docker.com/engine/security/security/#docker-daemon-attack-surface for more information. **

** DOCKER ENGINE - ENTERPRISE **

If you’re ready for production workloads, Docker Engine - Enterprise also includes:

* SLA-backed technical support
* Extended lifecycle maintenance policy for patches and hotfixes
* Access to certified ecosystem content

** Learn more at https://dockr.ly/engine2 **

ACTIVATE your own engine to Docker Engine - Enterprise using:

```
  sudo docker engine activate
```
Docker 6th Birthday: Show & Tell
Docker 6th Birthday: Show & Tell
DockerCon SF, April 2019

The CfP for DockerCon SF is now closed, but speakers at the Docker 6th Birthday may submit their talk at

Thank you!