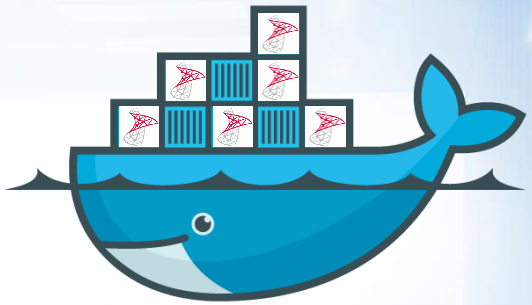
24 HOURS OF PASS
FRENCH 2016



Installer SQL Server Express sous Docker

Christophe Laporte

Présentation

Microsoft® SQL Server®

~ depuis 1997
6.5 <= SQL Server <= 2016

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http://conseilit.wordpress.com/

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- Optimisation / Dépannage

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Agenda

Micro services, Docker and SQL Server ….

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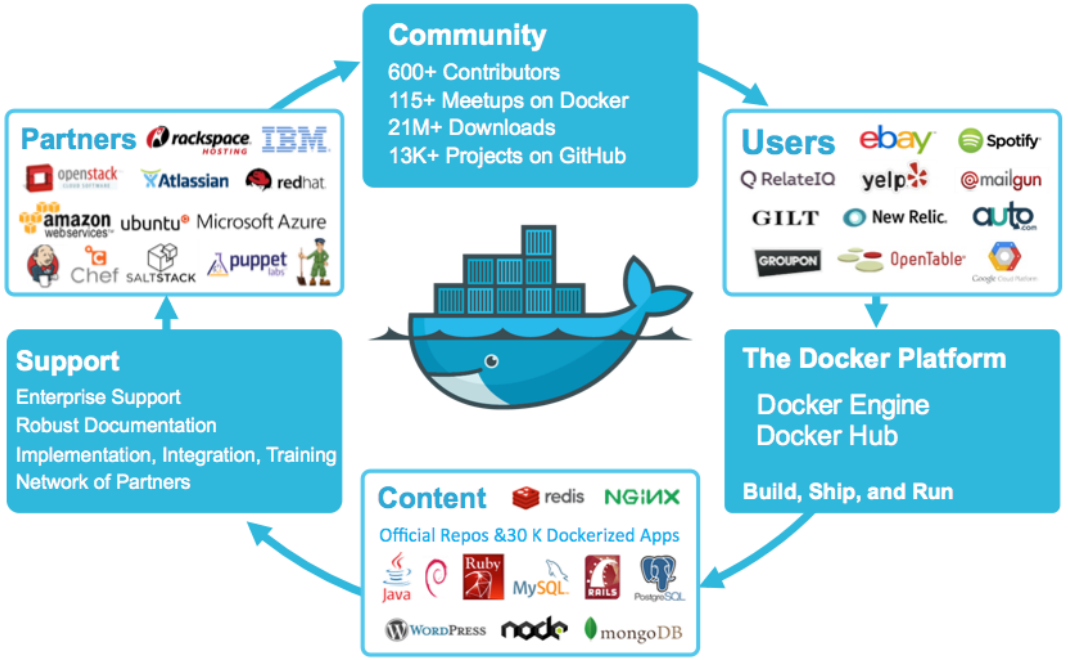
Mis en garde

Micro services

- Fin des applications monolithiques
- Nouvelle approche du développement
  - Ensemble de processus rendant des services simples
  - Briques légères pouvant évoluer de manière indépendante
  - Déploiement granulaire
- Objectif
  - Applications plus robustes, scalables et évolutives
- Semble devenir la norme ?
  - Netflix, Linkedin, Amazon, Ebay, Google, ING, …
- Comment ?
  - Azure …
  - Red Hat OpenShift
  - Windows containers et Hyper-V containers
  - Docker



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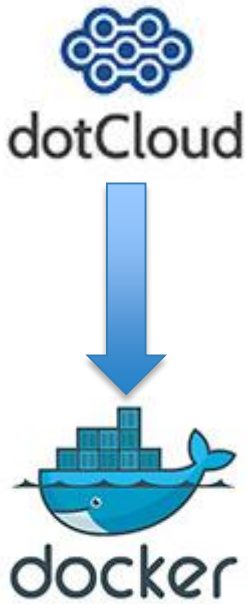
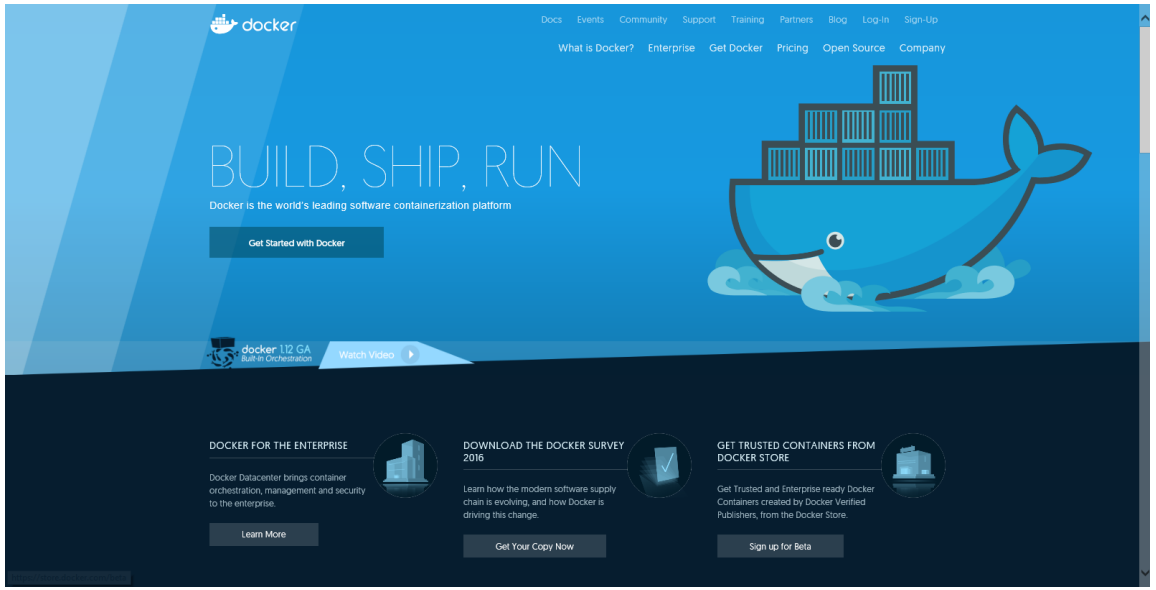
Docker ?

- Société
  - dotCloud
    - Créée en 2008 à Montrouge par Solomon Hykes et Sébastien Pahl
  - 2010 : mise en avant du concept de conteneur
  - 2011 : dotCloud s'implante dans la Sillicon Valley
  - 2013 : Passage en mode open-source
  - 2013 : fondation d'une nouvelle société Docker Inc
- Terminologie
  - Image
  - Conteneur
- Docker Hub
- Docker & Windows
  - Windows 2016
  - Windows 10





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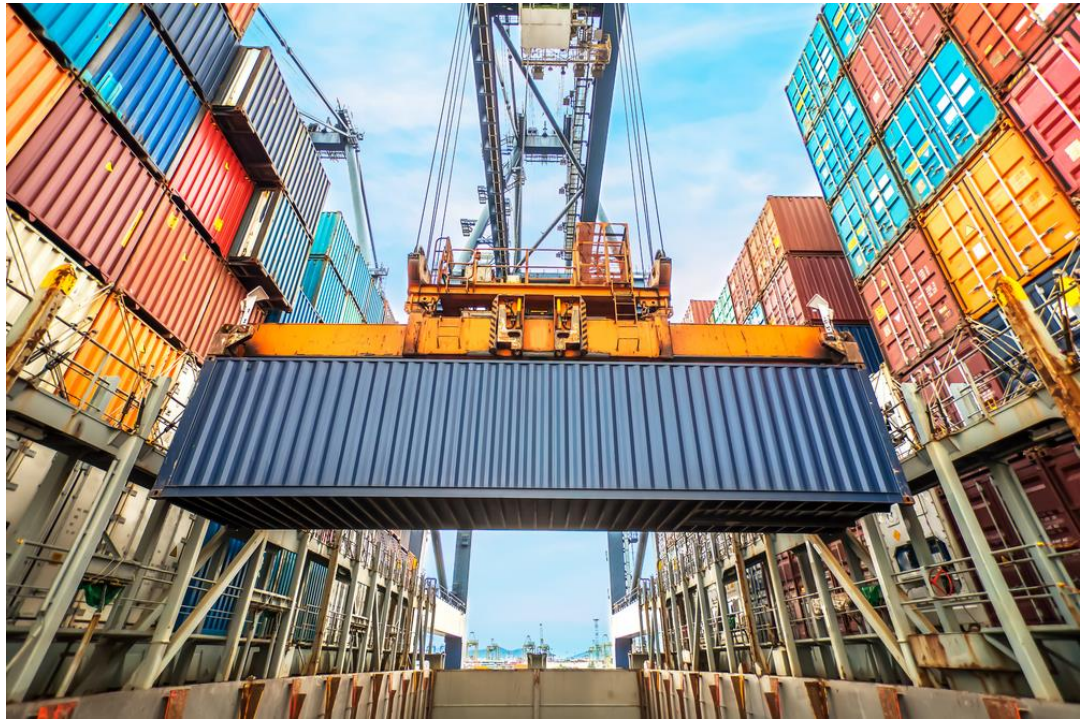
Conteneurs ?

- Pourquoi des containers
  - Emprunte système faible, efficacité des serveurs hôtes
  - Une seule création d'image, puis exécution multiples (dev / test / prod)
  - Adapté aux micro services
  - Eviter «cela fonctionne sur ma machine»
  - Mise à l'échelle massive
  - Dev Ops
- Caractéristiques des charges de travail
  - Démarrage rapide pour supporter une montée en charge
  - Complexité globale résolue par des sous tâches simples
  - Charge distribuée
  - Sans état
- Déploiement
  - Déploiement à large échelle
  - Déploiement rapide
  - Hautement automatisable
  - Multi tenant



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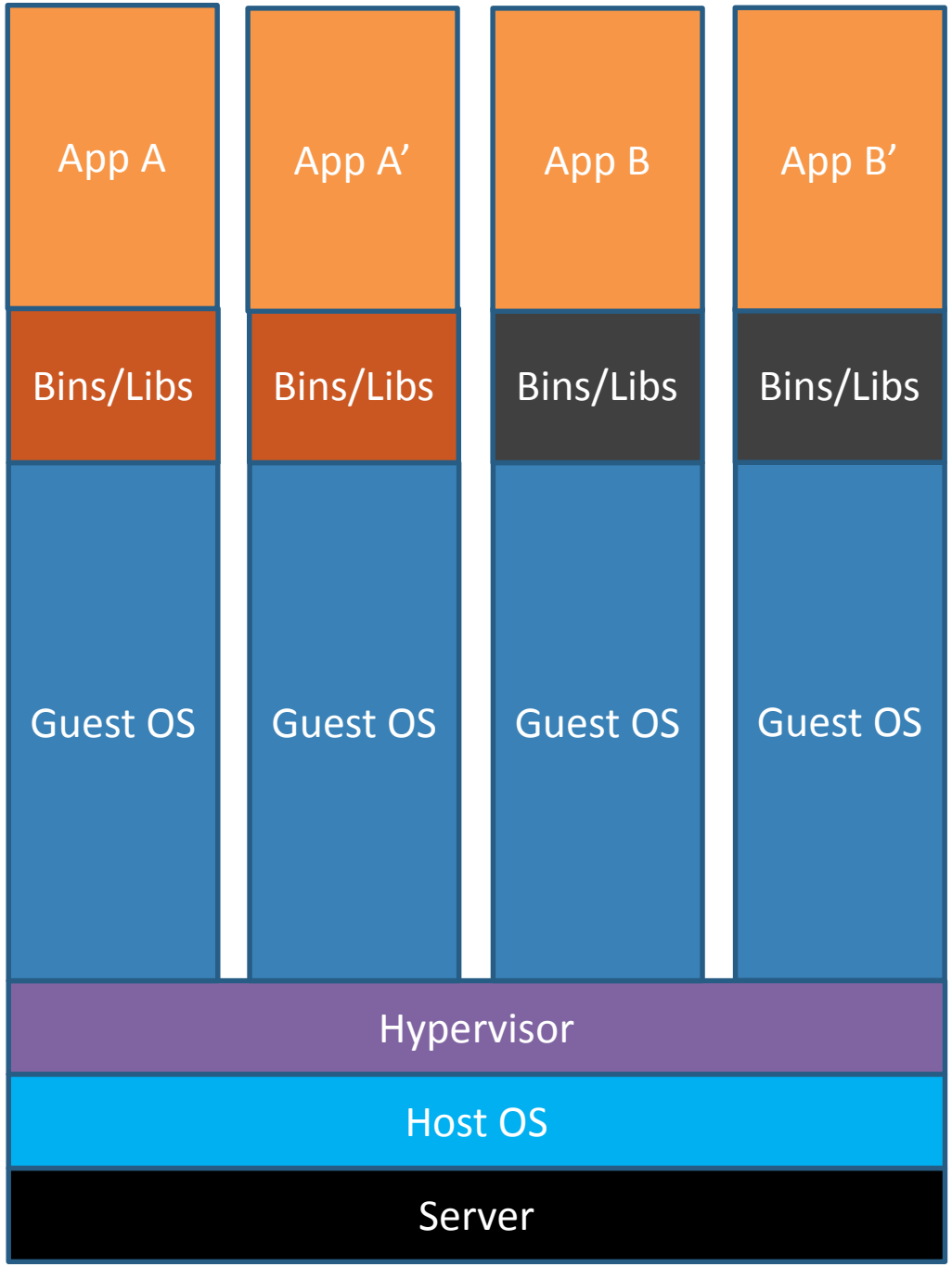
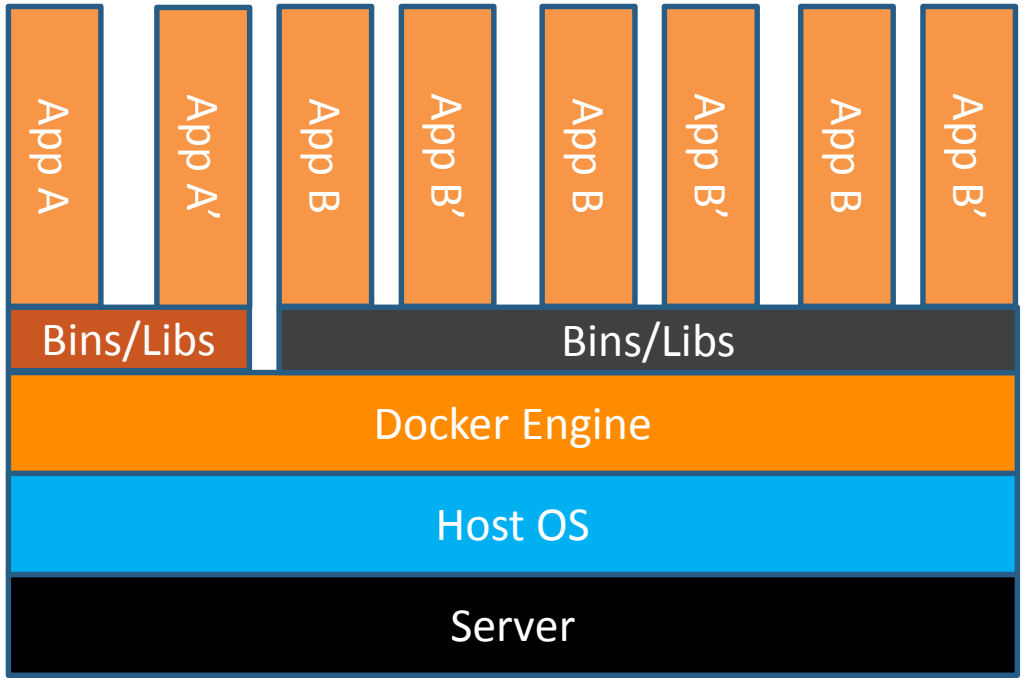
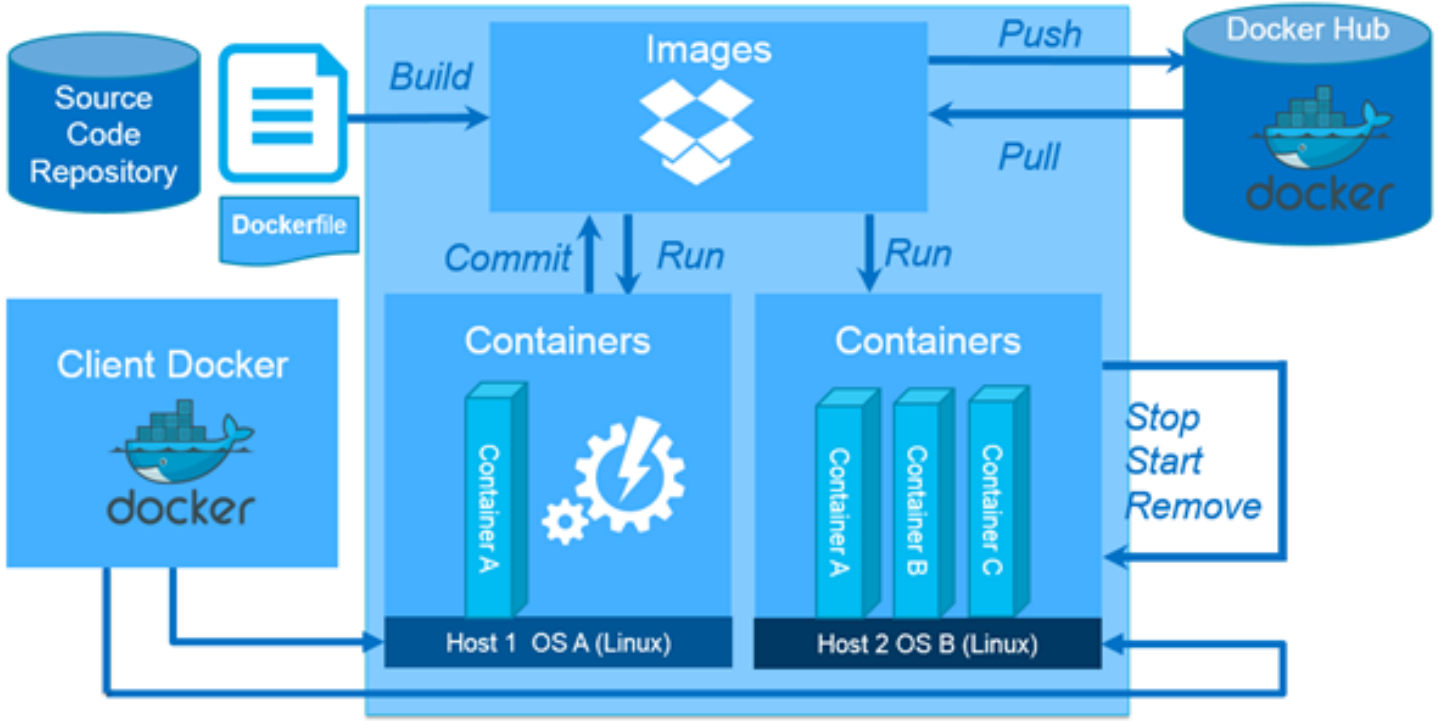
Machines virtuelles versus conteneurs





Commandes : docker --help

- 45 commandes (v1.13.0-dev)
- Les commandes essentielles :
  - build Build an image from a Dockerfile
  - ps List containers
  - pull Pull an image or a repository from a registry
  - rm Remove one or more containers
  - rmi Remove one or more images
  - run Run a command in a new container
  - start Start one or more stopped containers
  - stop Stop one or more running containers



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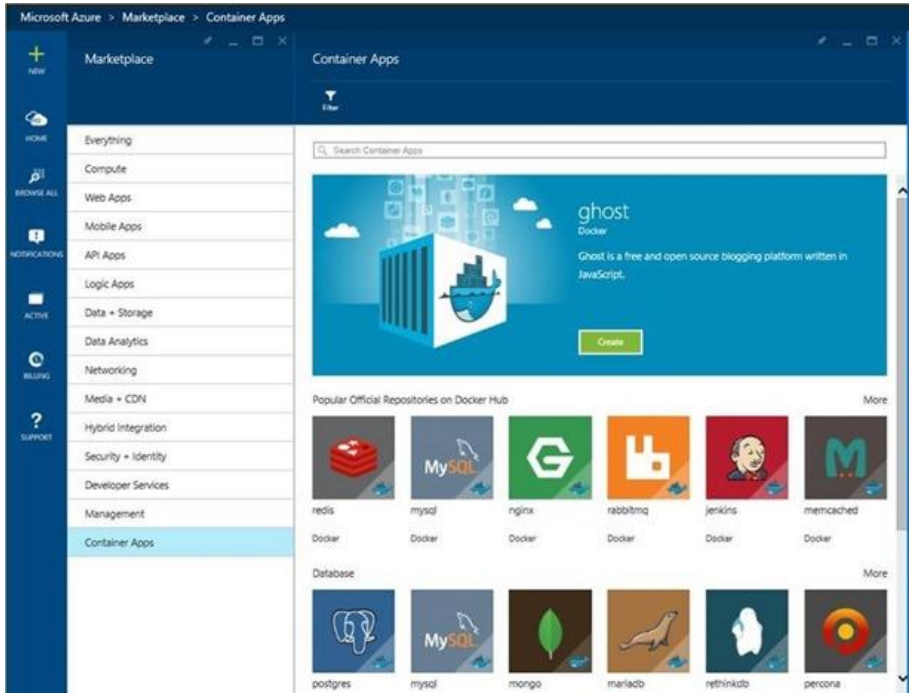
Docker & Microsoft

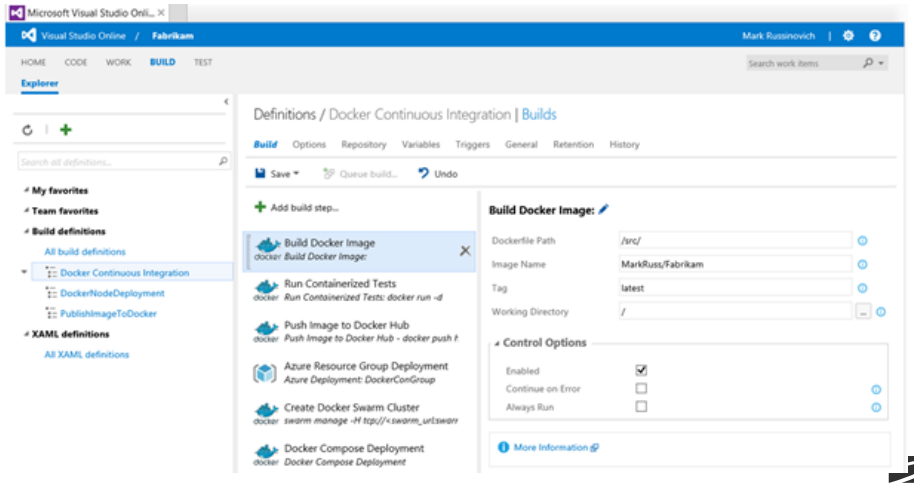


Azure Blog > Virtual Machines

TUESDAY, JUNE 23, 2015

Docker and Microsoft announce more innovation to cross platforms and win hearts

COREY SANDERS
Director of Program Management, Azure



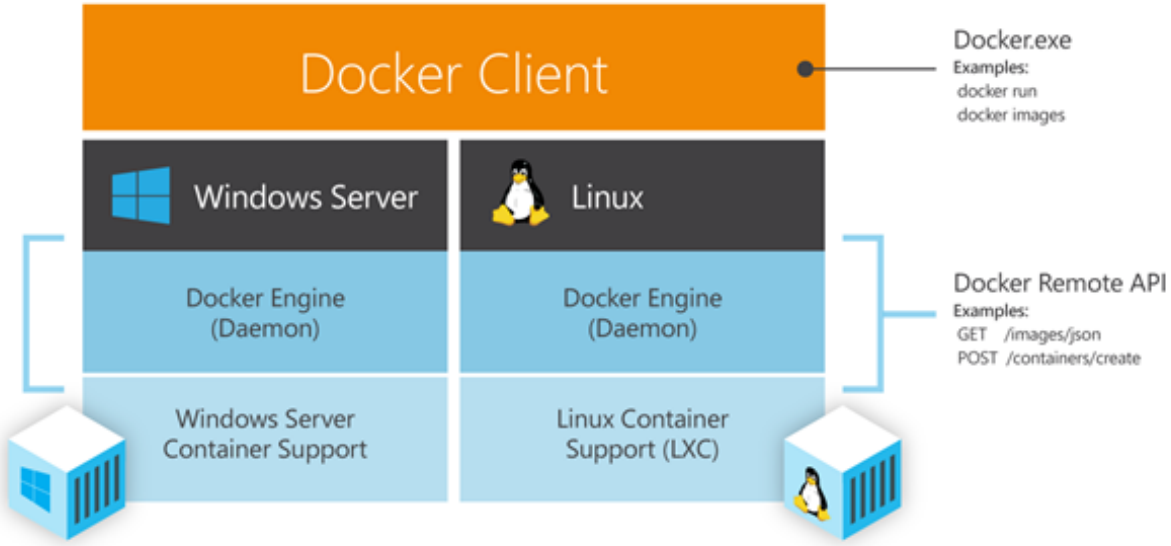
I can't believe it was only one year ago, at DockerCon, that we announced the first step in our partnership with Docker. While we didn't quite know it at the time (despite the blog title), this marked a pivotal moment in our evolution.

Since then, in partnership with Docker, we have been working on a broad set of innovations that further empower you to build and run the next great app. This list includes Windows Server Containers, Hyper-V Containers, Docker VM Extensions for Linux on Azure, Docker CLI support on Windows, Compose and Swarm support on Azure, Visual Studio Tooling for Docker, and more. To-

Docker pour Windows

Scénario de la démo :

- Installation de la fonctionnalité Conteneur
- Installation de Docker
  - Enregistrement en tant que service
- Installation des images de base
  - Windows server core
  - Windows nano server
- (Déploiement d'un conteneur depuis Docker Hub)
  - Docker pull
- Création d'un conteneur
  - Fichier Dockerfile
  - Docker build
- Exécution d'un conteneur
  - Docker run



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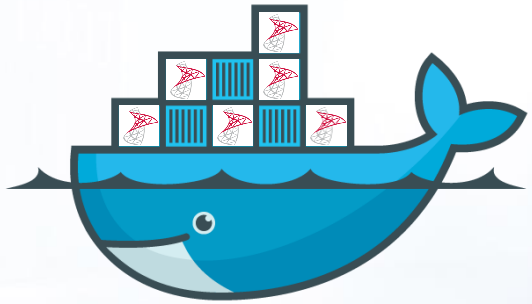
24 HOURS OF PASS
FRENCH 2016

Démo



Fichier Dockerfile

```
# base image
FROM microsoft/dotnet35

MAINTAINER Buc Rogers

ENV sqlinstance SQL
ENV sqlsapassword Password1
ENV sql c:\\sql
ENV sqldata c:\\sql\\data
ENV sqlbackup c:\\sql\\backup

COPY . /install

WORKDIR /install

RUN  /install/sqlexpr_x64_enu.exe /q /x:/install/setup \
  && /install/setup/setup.exe /q /ACTION=Install /INSTANCENAME=%sqlinstance%
/FEATURES=SQLEngine /UPDATEENABLED=0 \
     /SECURITYMODE=SQL /SAPWD=%sqlsapassword% /SQLSVCACCOUNT="NT
AUTHORITY\System"  /SQLSYSADMINACCOUNTS="BUILTIN\ADMINISTRATORS" \
     /INSTALLSQLDATADIR=%sqldata% /SQLUSERDBLOGDIR=%sqldata%
/SQLBACKUPDIR=%sqlbackup% \
     /TCPENABLED=1 /NPENABLED=0 /IACCEPTSQLSERVERLICENSETERMS \
  && powershell ./Set-SqlExpressStaticTcpPort %sqlinstance% \
  && powershell ./Move-dirs-and-stop-service %sqlinstance% %sql% %sqldata% %sqlbackup% \
  && del sqlexpr_x64_enu.exe \
  && rmdir .\setup /s /q

CMD powershell ./start detached %sqlinstance% %sqldata% %sqlbackup%
```

Instructions

- #
  - Commentaires
- FROM (1..N)
- MAINTAINER
- ENV (1..N)
- COPY / ADD (1..N)
  - Copier des ressources du host vers le système de fichier du conteneur
- RUN (1..N)
  - Exécute une commande dans une nouvelle couche puis est committee dans l'image
- CMD (1)
  - Commande par défaut lors de l'exécution du conteneur

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Commandes : docker --help

- attach Attach to a running container
- build Build an image from a Dockerfile
- commit Create a new image from a container's changes
- cp Copy files/folders between a container and the local filesystem
- create Create a new container
- diff Inspect changes on a container's filesystem
- events Get real time events from the server
- exec Run a command in a running container
- export Export a container's filesystem as a tar archive
- history Show the history of an image
- images List images
- import Import the contents from a tarball to create a filesystem image
- info Display system-wide information
- inspect Return low-level information on a container, image or task
- kill Kill one or more running containers
- load Load an image from a tar archive or STDIN
- login Log in to a Docker registry.
- logout Log out from a Docker registry.
- logs Fetch the logs of a container
- network Manage Docker networks
- node Manage Docker Swarm nodes
- pause Pause all processes within one or more containers
- port List port mappings or a specific mapping for the container
- ps List containers
- pull Pull an image or a repository from a registry
- push Push an image or a repository to a registry
- rename Rename a container
- restart Restart a container
- rm Remove one or more containers
- rmi Remove one or more images
- run Run a command in a new container
- save Save one or more images to a tar archive (streamed to STDOUT by default)
- search Search the Docker Hub for images
- service Manage Docker services
- start Start one or more stopped containers
- stats Display a live stream of container(s) resource usage statistics
- stop Stop one or more running containers
- swarm Manage Docker Swarm
- tag Tag an image into a repository
- top Display the running processes of a container
- unpause Unpause all processes within one or more containers
- update Update configuration of one or more containers
- version Show the Docker version information
- volume Manage Docker volumes
- wait Block until a container stops, then print its exit code

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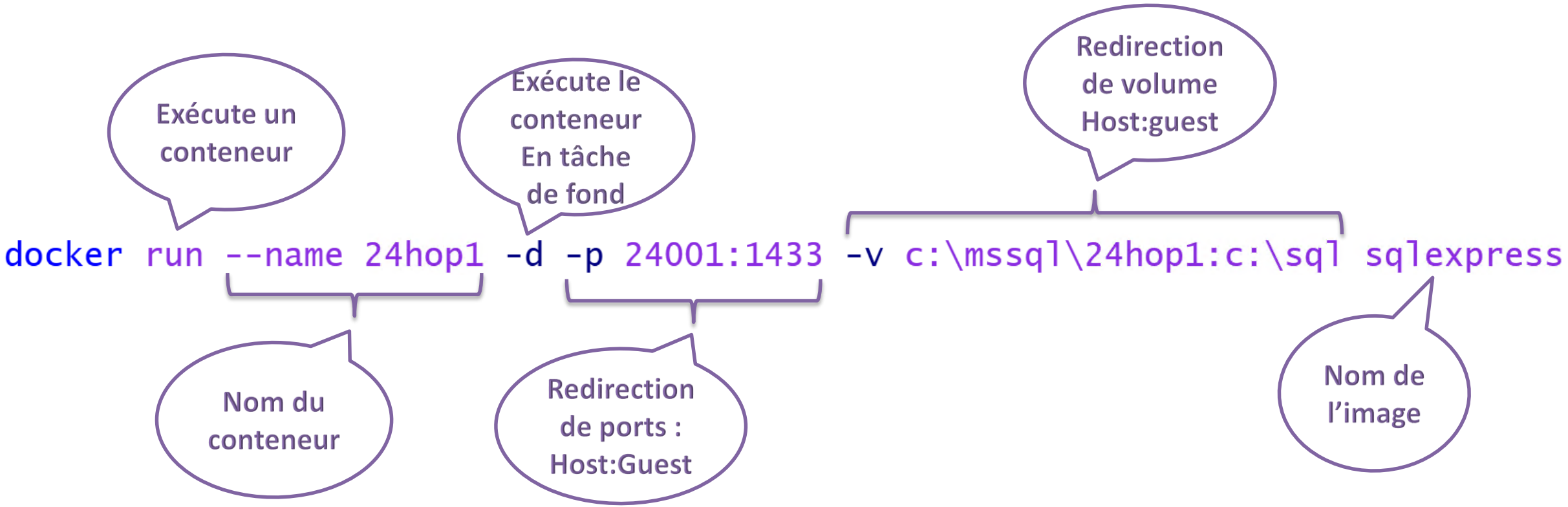
Docker run



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Docker run --help

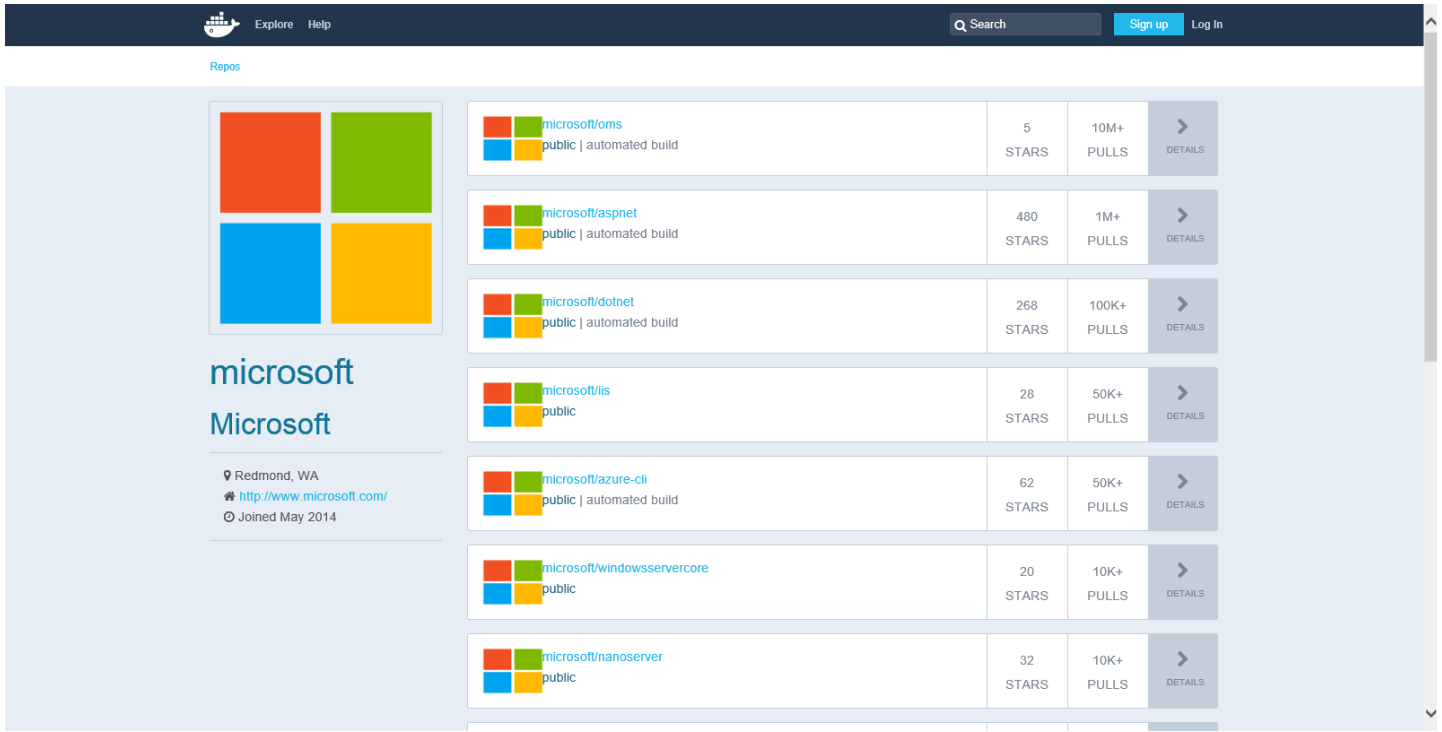
```
Usage:docker run [OPTIONS] IMAGE [COMMAND] [ARG...]

Run a command in a new container

Options:
      --add-host value              Add a custom host-to-IP mapping (host:ip) (default [])
  -a, --attach value                Attach to STDIN, STDOUT or STDERR (default [])
      --blkio-weight value          Block IO (relative weight), between 10 and 1000
      --blkio-weight-device value   Block IO weight (relative device weight) (default [])
      --cap-add value               Add Linux capabilities (default [])
      --cap-drop value              Drop Linux capabilities (default [])
      --cgroup-parent string        Optional parent cgroup for the container
      --cidfile string              Write the container ID to the file
      --cpu-percent int             CPU percent (Windows only)
      --cpu-period int              Limit CPU CFS (Completely Fair Scheduler) period
      --cpu-quota int               Limit CPU CFS (Completely Fair Scheduler) quota
  -c, --cpu-shares int              CPU shares (relative weight)
      --cpuset-cpus string          CPUs in which to allow execution (0-3, 0,1)
      --cpuset-mems string          MEMs in which to allow execution (0-3, 0,1)
  -d, --detach                      Run container in background and print container ID
      --detach-keys string          Override the key sequence for detaching a container
      --device value                Add a host device to the container (default [])
      --device-read-bps value       Limit read rate (bytes per second) from a device (default [])
      --device-read-iops value      Limit read rate (IO per second) from a device (default [])
      --device-write-bps value      Limit write rate (bytes per second) to a device (default [])
      --device-write-iops value     Limit write rate (IO per second) to a device (default [])
      --disable-content-trust       Skip image verification (default true)
      --dns value                   Set custom DNS servers (default [])
      --dns-opt value               Set DNS options (default [])
      --dns-search value            Set custom DNS search domains (default [])
      --entrypoint string           Overwrite the default ENTRYPOINT of the image
  -e, --env value                   Set environment variables (default [])
      --env-file value              Read in a file of environment variables (default [])
      --expose value                Expose a port or a range of ports (default [])
      --group-add value             Add additional groups to join (default [])
```

Docker Hub & Microsoft

- Images officielles ou officieuses
  - Windows Server Core
  - Nano Server
  - SQL Server Express
  - MySQL
  - MongoDB
  - ASPNET
  - IIS
  - ….



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SQL Server Express

- Pourquoi SQL Server Express ?
  - Version légère de SQL Server (200MB pour les sources d'installation)
  - Edition adaptée à la philosophie du conteneur
    - limitée en mémoire
    - Limitée en taille de bases
    - Service simple (seulement le moteur relationnel)
- Cas d'utilisation
  - Développement sur Machines Mac / Linux
  - Tests
  - Montée en charge : Répartition de charge
    - Mise à jour des données
      - /!\ Réplication ne fonctionne pas !
      - Service broker
      - Serveur lié
  - Environnement cloud et micro-services
    - SQL Server & Linux ?

Microsoft® SQL Server® Express

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Automatisation & gestion de configuration

Infrastructure

- Infrastructure en tant que code

Gestion de configuration

- Installation / gestion sur machine existante

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Questions?

Merci de votre participation