

# Packaging for Mageia Linux with Docker containers

# Introducing myself

- Software engineering and Unices since 1988:
  - Mostly Configuration Management Systems (CMS), Build systems, quality tools, on multiple commercial Unix systems
  - Discovered Open Source & Linux (OSL) & made first contributions in 1993
  - Full time on OSL since 1995
- Currently:
  - OSL Technology **Strategist** , Grenoble, France
  - FLOSSITA **board chair**
  - POSS conference, OpenStack.fr, AFUL **previous board member**.
  - Conferences at WW level at LinuxCon, Linux.conf.au, Fosdem, ...
  - MondoRescue, Project-Builder.org, python-redfish, UUWL and PUSK **Project Lead**
  - LinuxCOE, mrepo, tellico, rinse, fossology, collectl, Ironic **contributor**
  - FOSSBazaar/SPDX and OSL **Governance** enthusiast
  - Mandriva, Mageia **packager**
- And also:
  - Amateur singer (Alto / Tenor), recorder player since 1976 and Choir **director** since 1987, CD collector (6000+), Concerts, Photography

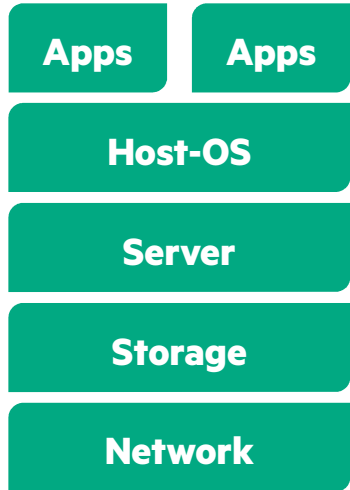
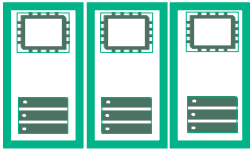




# Some reminders

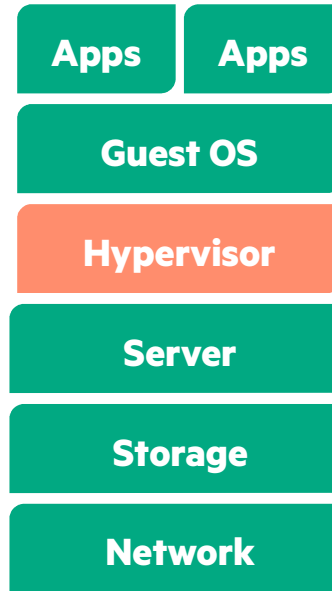
# Bare-Metal vs VM vs Container

## Bare metal application layer

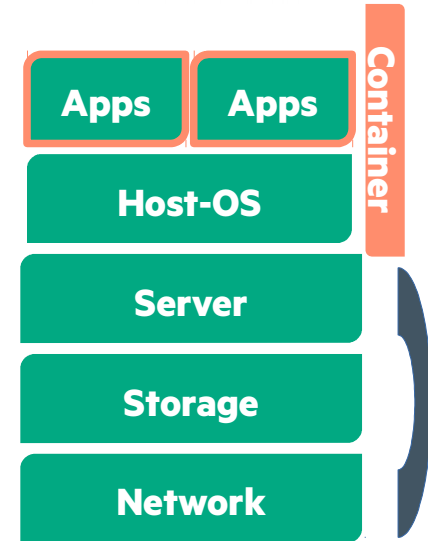


Infra  
structure

## Virtualized application layer (machine virtualization)



## Containerized application layer (process virtualization)



# What is Docker value-add ?

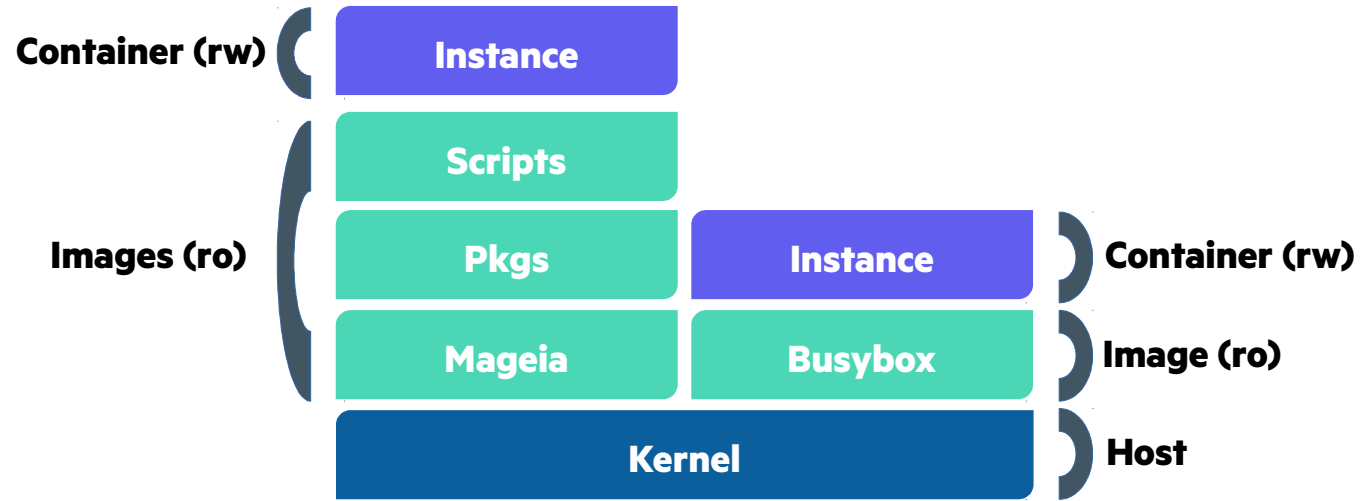
Run applications in a neutral, lightweight and portable way

- **Bundle:** Everything packed together for a new delivery model
- **Approch:** One process == One container
- **Layers:** Images (ro) & containers (rw) using a union FS
- **Registry:** public/private registry of shared images
- **Dockerfile:** descriptive build of an image
- **Volumes:** loopback mounting host FS into container
- **Ports:** expose container services port to the host
- **Portable:** created once, run everywhere (on a given OS)
- **Composition:** Simple YAML files
- **HA:** Swarm and/or K8s
- **Management:** REST API/CLI
- **Language:** Go and some python
- **License:** Apache v2.0



Solomon Hykes, Docker « creator ».

# A layered approach



1 application + its deps == 1 container

## ● Images

- Local or remote reference content to initiate a container
- Multiple images can be layered adding content at each time using Copy on Write FS
- Cache to speed up repeated operations

## ● Containers

- Last layer providing rw access to the cumulated set of images

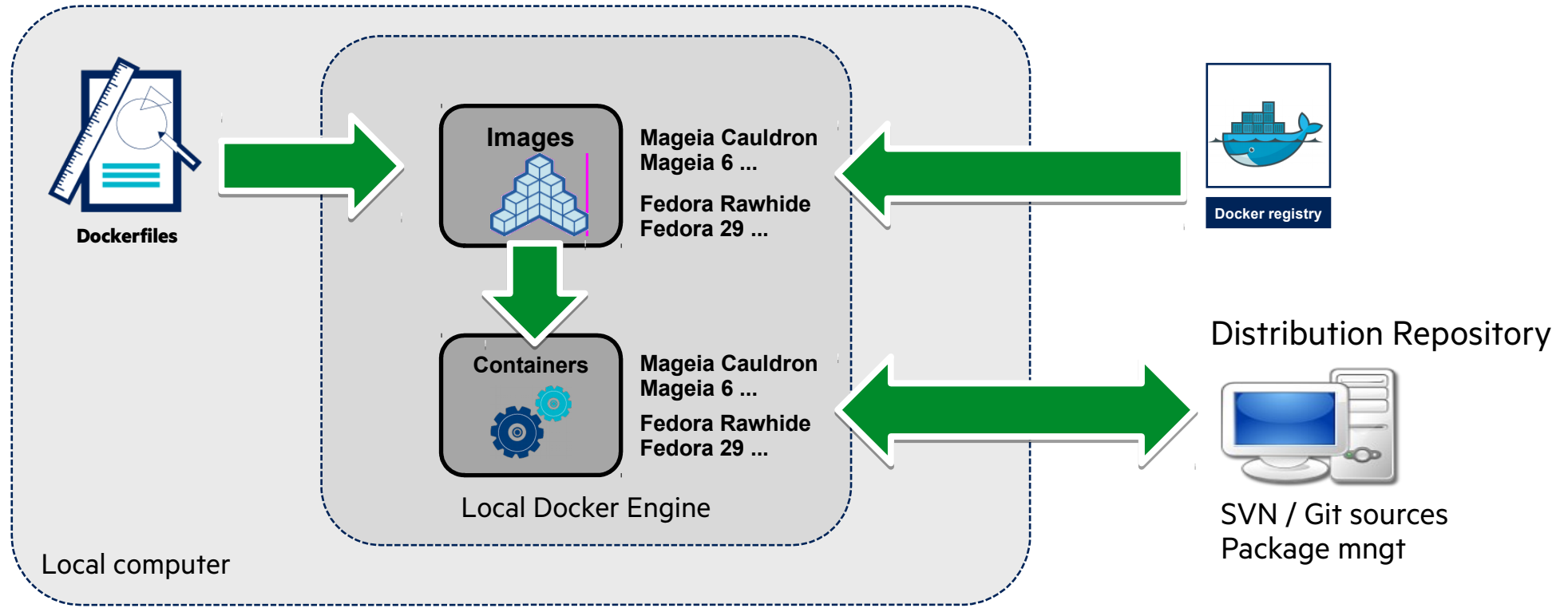


# Why building distribution packages with Containers vs VMs?

- **Containers like VMs bring isolation**
  - No pollution of your running environment
  - Easily scratch and redo if problems
  - Easier refinement & automation of the build environment with the Docker file
- **Containers like VMs bring multi-distribution support**
  - Easy to build for another distribution than yours
  - Useful also for your own distro: not everybody uses an unstable distro
- **Containers can use natively your home directory**
  - Allow sharing of your package sources for local and in container build
  - Allow sharing of your .rpmmacros, .rpmrc files, Mageia SSH keys (or Fedora certs)
- **VMs are mandatory if you need a different kernel**



# Basic Docker workflow to build distribution packages





# Building distribution images with a Dockerfile

```
mkdir -p $TMPDM
cd $TMPDM

MUID=`getent passwd $USER | cut -d: -f3`
MGID=`getent passwd $USER | cut -d: -f4`

# Build the Dockerfile
cat > Dockerfile << EOF
FROM mageiaofficial:$MGAVER
MAINTAINER bcornec@mageia.org
RUN urpmi.update -a -c -f
# Not useful if using mageiaofficial:$MGAVER
#RUN urpmi.removemedias -a
#RUN urpmi.addmedia --probe-hdlist --distrib mga $MGAMIRROR/$MGAVER/$MGAARCH
RUN urpmi --auto --auto-select --no-recommends
RUN urpmi --auto bm subversion mgarepo colordiff sudo
RUN useradd $USER -u $MUID -g $MGID -N -M -d $HOME
RUN echo "$USER    ALL=(ALL)        NOPASSWD:ALL" >> /etc/sudoers
RUN mkdir -p $HOME
WORKDIR $WORKDIR
USER $USER
CMD /bin/bash
EOF
fi
```



# Running distribution containers with a Docker

```
stat=0
docker inspect pb:mageiabuild$MGAVER 2>&1 > /dev/null
if [ $? -eq 0 ]; then
    if [ "$FORCE" = "1" ]; then
        docker rmi pb:mageiabuild$MGAVER
    fi
else
    docker build --file=Dockerfile -t pb:mageiabuild$MGAVER .
    stat=$?
fi
if [ $stat -eq 0 ]; then
    docker run --rm -v "$SSH_AUTH_SOCK":/ssh-agent -v $HOME:$HOME -e SSH_AUTH_SOCK=/ssh-agent -ti pb:mageiabuild$MGAVER
fi
```

Reference script:

<https://github.com/bcornec/mageia-docker/blob/master/run-mageia>

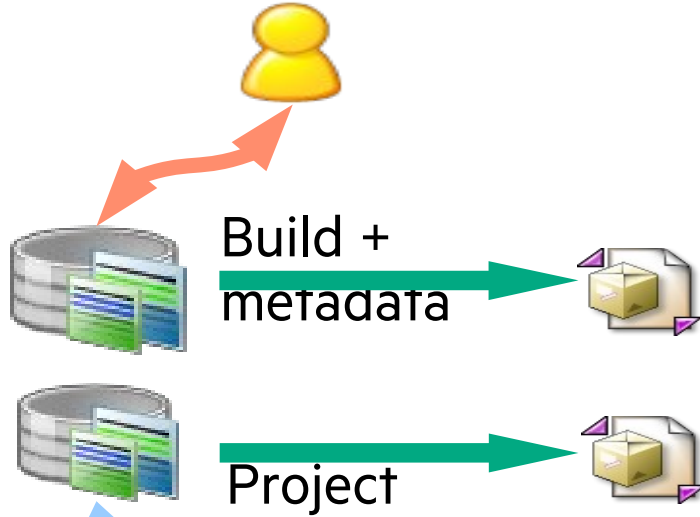


# Show Time !

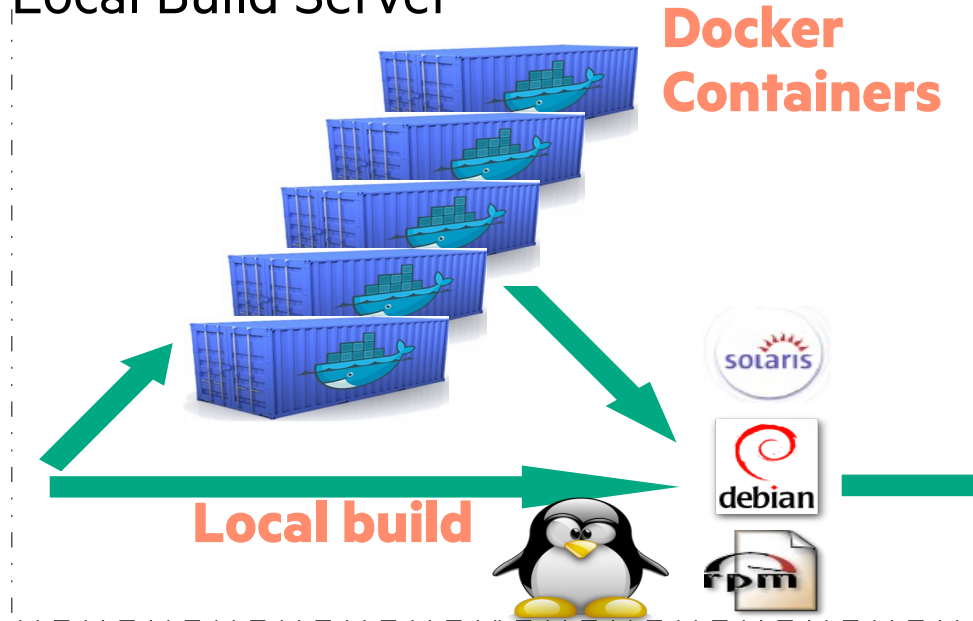


# Continuous Packaging with Docker & project-builder.org

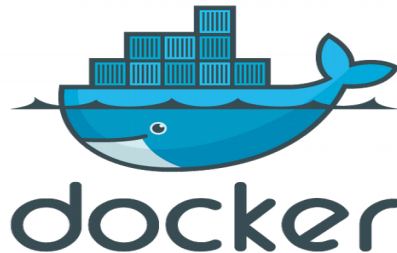
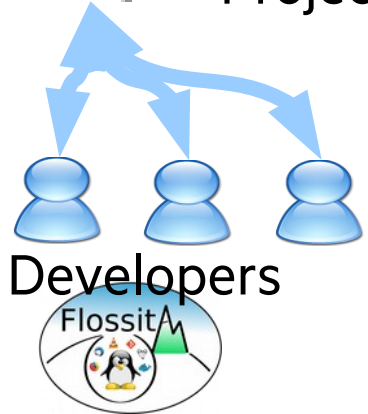
Packagers

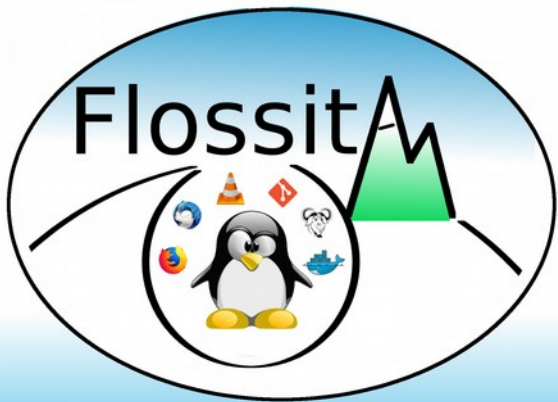


Local Build Server



Project Repository





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# THANK YOU

Linus Torvalds, Richard Stallman, Eric Raymond, Nat Makarevitch, René Cougnenc, Eric Dumas, Rémy Card, Bdale Garbee, Solomon Hykes, Bryan Gartner, Andree Leidenfrost, Phil Robb, Bob Gobeille, Martin Michlmayr among others, for their work and devotion to the Open Source Software cause... and my family for their patience :-)