

OPENNTF WEBINARS

September OpenNTF Webinar - Domino on Docker (and free alternatives)!



AGENDA

- Welcome
- Presentation – Martin de Jong and Paul Withers
- Q and A - All



THANKS TO THE OPENNTF SPONSORS

- HCL made a contribution to help our organization
 - Funds these webinars!
 - Contests like Hackathons
 - Running the organization
- Prominic donates all IT related services
 - Cloud Hosting for OpenNTF
 - Infrastructure management for HCL Domino and Atlassian Servers
 - System Administration for day-to-day operation



THIS IS OUR COMMUNITY

- Join us and get involved!
- We are all volunteers
- No effort is too small
- If your idea is bigger than you can do on your own, we can connect you to a team to work on it
- Test or help or modify an existing project
- Write guides or documentation
- Add reviews on projects / stars on Snippets

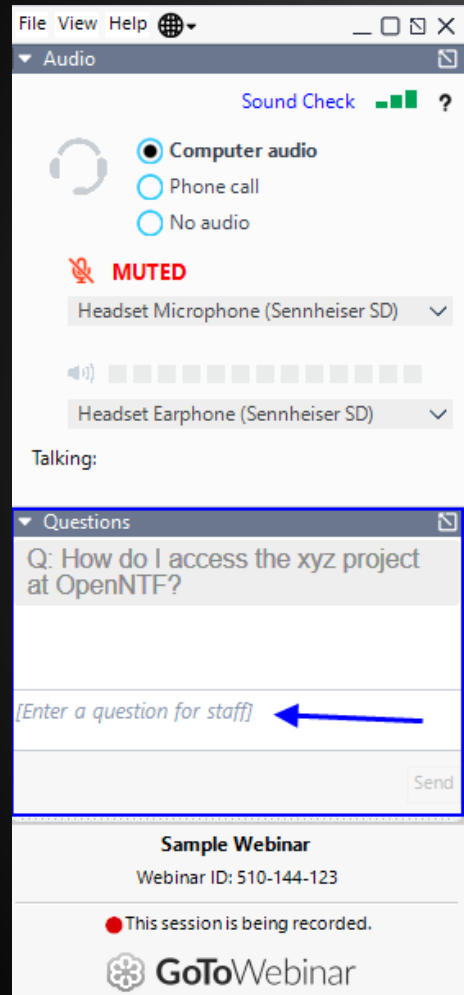


NEXT WEBINAR

- Watch <https://www.openntf.org/webinars> for more information



ASKING QUESTIONS



- First Question – Will this be recorded?
 - Yes, view on YouTube!!!
 - <https://www.youtube.com/user/OpenNTF>
- Use the Questions Pane in GoToWebinar
- We will get to your questions at the end of the webinar
- The speakers will respond to your questions verbally
 - (not in the Questions pane)
- Please keep all questions related to the topics that our speakers are discussing!!!
- Unrelated Question => post at:
 - <https://openntf.org/discord>



DOMINO ON DOCKER (AND FREE ALTERNATIVES)!

Martin de Jong, e-office
Paul Withers, HCL



Why it's a good time to use Domino as a Container in production and how to start

Martijn de Jong



www.e-office.com

Who Am I - Martijn de Jong

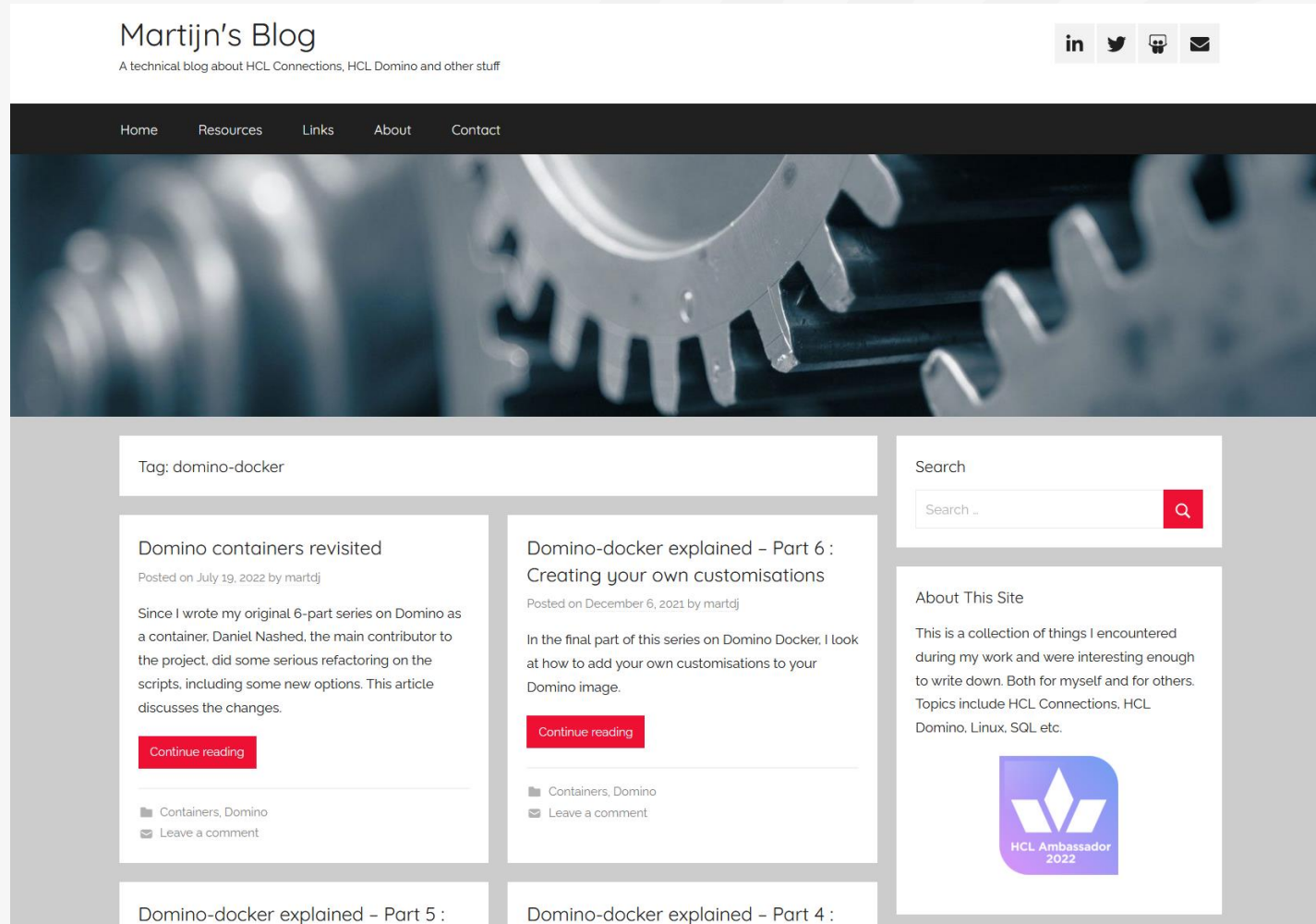
- Senior HCL Consultant @ e-office
- Studied electrical engineering, psychology and music
- Working with “Lotus” portfolio since 2000



@martdj



My Blog - <https://blog.martdj.nl>



Domino Container History

2017: Ulrich Krause writes blog article on how to create a Domino container (9.0.1 FP10)

2Q 2018: Gabriele Davis presents “Docker for Domino” @Engage

4Q 2018: Thomas Hampel creates Domino Docker github repository @IBM

4Q 2018: Daniel Nashed joins the project. Starts scripting the entire installation

The Domino Docker Community Image is born! 😊

2019/2020: Thomas Hampel & Daniel Nashed present: “Domino on Docker bootcamp”



Agenda

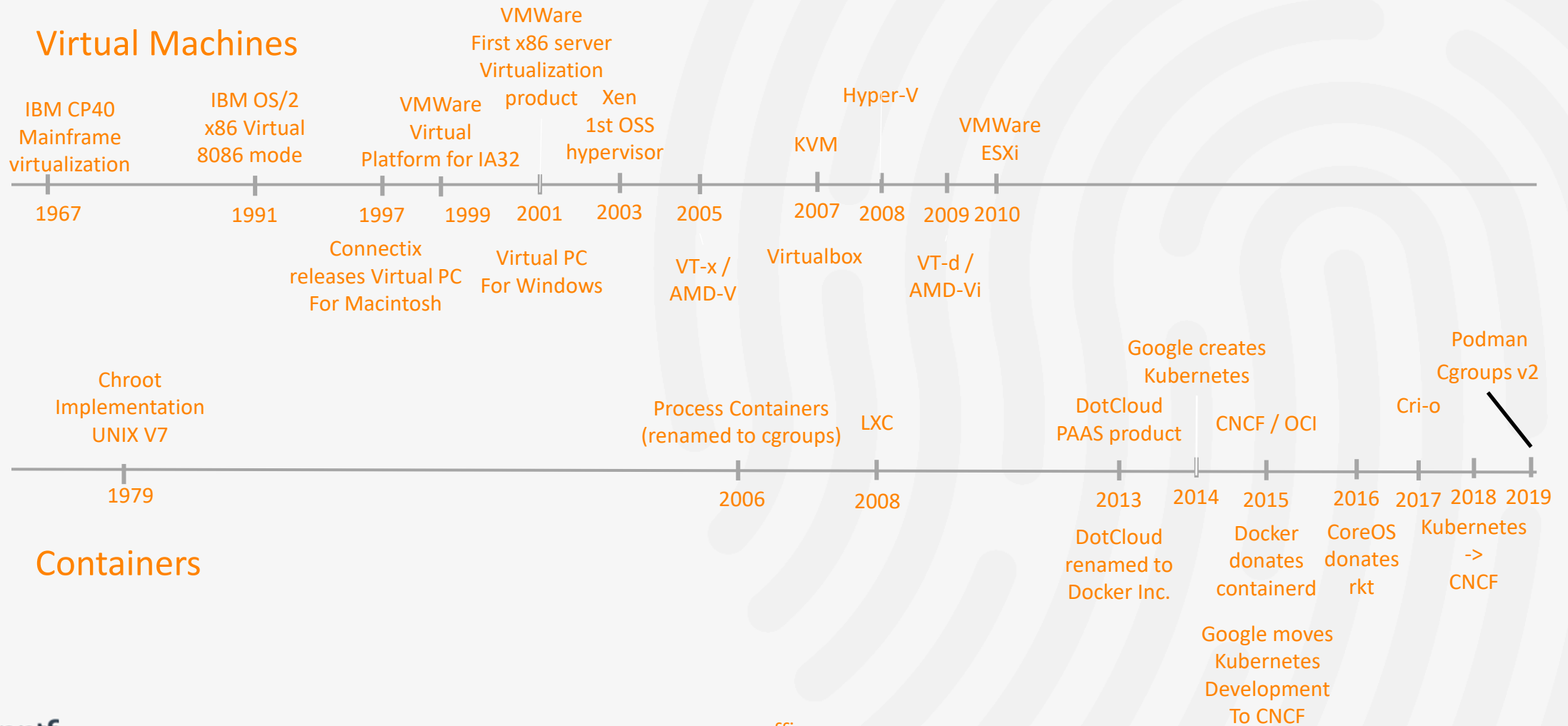
- ▶ History of Containers
- ▶ Container Basics
- ▶ Why Domino containers in production
- ▶ Build-up of the Domino Container
- ▶ Building the image
- ▶ Install and run a new Domino server
- ▶ Convert an existing Domino server
- ▶ Customising / upgrading an Image
- ▶ Conclusion



**Any Questions...
Just Ask!**



A bit of History

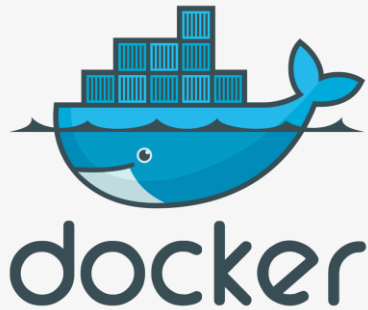


Container Engines

- containerd
- CRI-O
- Docker Engine
- Mirantis Container Runtime (TEFKA Docker Enterprise)
- Podman



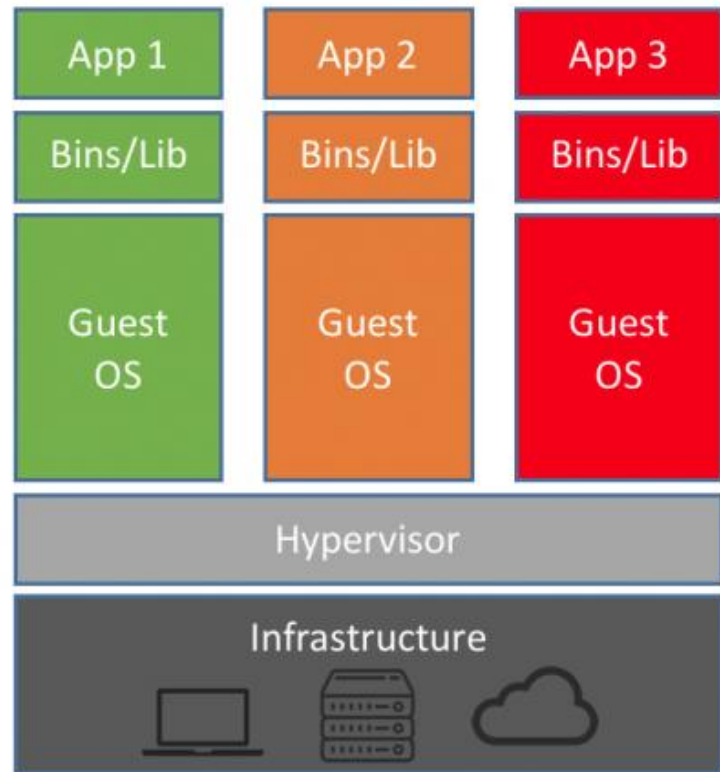
cri-o



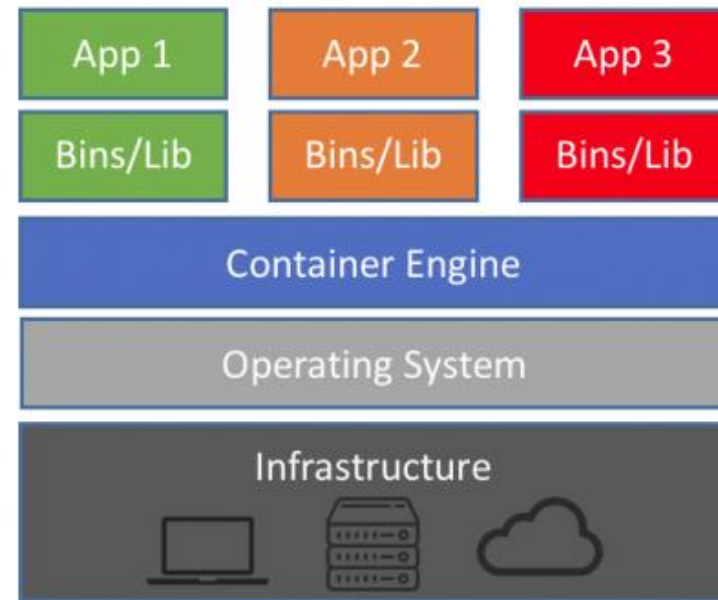
podman



Containers vs Virtual Machines

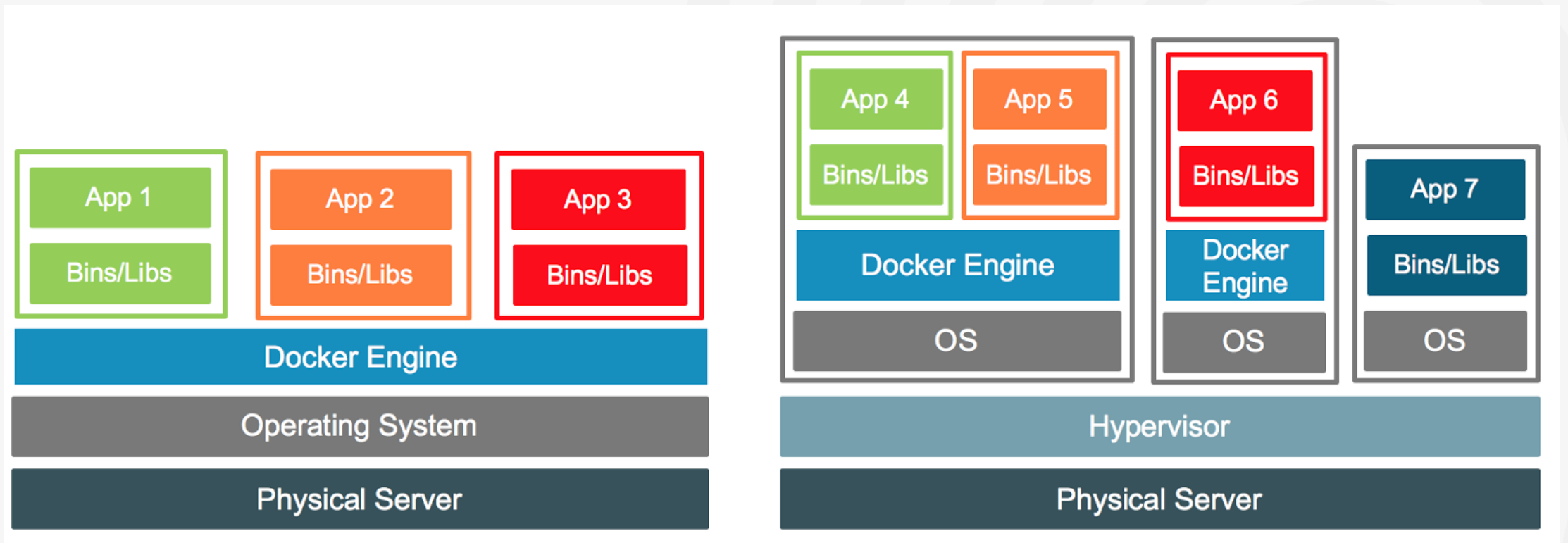


Machine Virtualization



Containers

Containers *on* virtual machines



Why Run Domino as a Container?

- ▶ Standardisation
 - ▶ Start / stop command, locations of folders are the same on all servers
- ▶ Upgradability
 - ▶ Upgrading a server takes less than a minute
- ▶ Portability
 - ▶ Moving a server becomes a lot easier



Demo Start!



The Demo Environment

Demo01

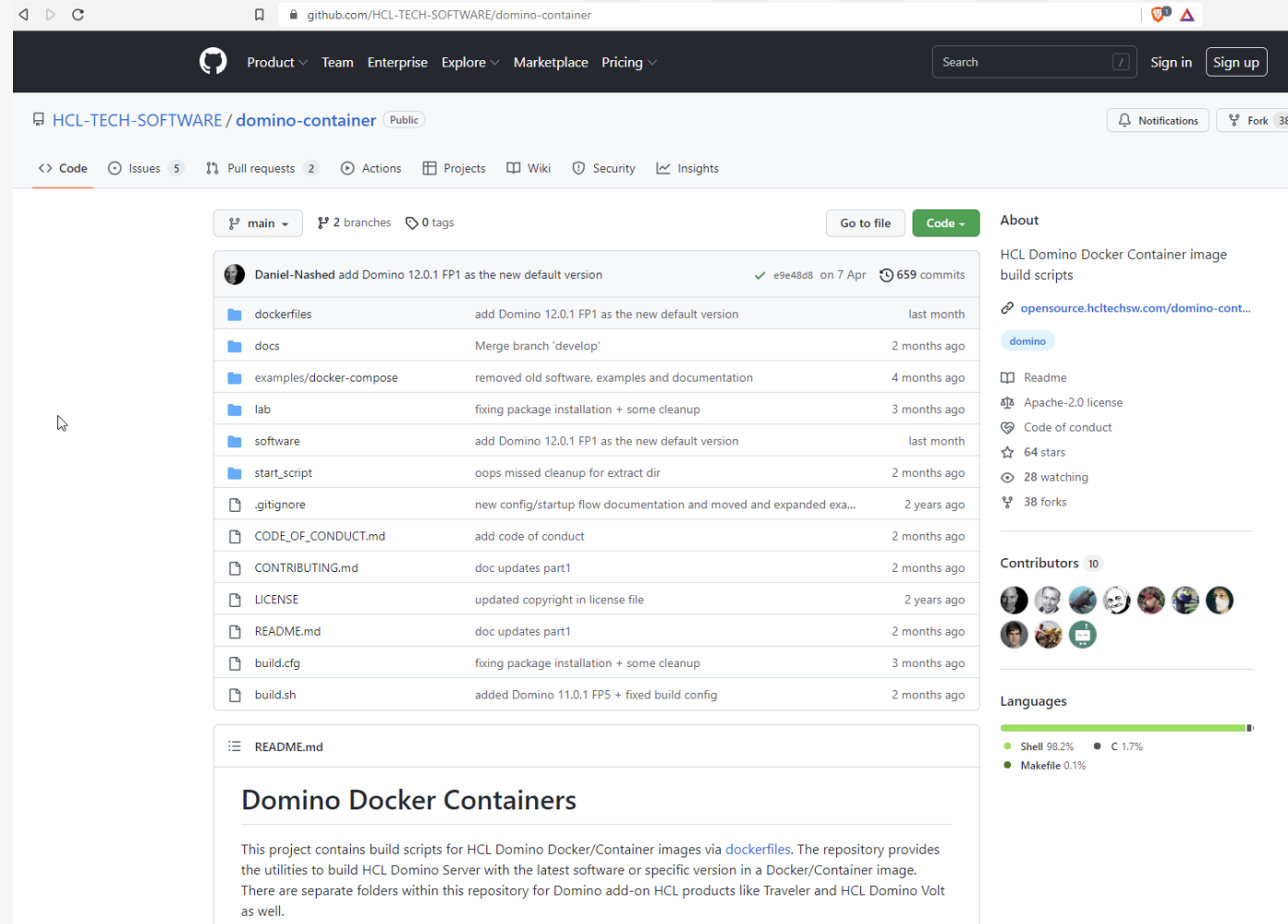
- ▶ VM: 2 vCPU, 4GB Memory
- ▶ OS: CentOS 8 Stream
- ▶ Container Engine: Podman
- ▶ HCL Software packages in /local/software

Demo02

- ▶ VM: 1 vCPU, 2GB Memory
- ▶ OS: Rocky Linux release 8.5 (Green Obsidian)
- ▶ Container Engine: Docker CE
- ▶ Domino 12.0.1 installed



But how to start?



The screenshot displays the GitHub repository page for `HCL-TECH-SOFTWARE / domino-container`. The repository is public and has 659 commits, 2 branches, and 0 tags. The commit history shows a recent commit by Daniel-Nashed adding Domino 12.0.1 FP1 as the new default version. The repository structure includes folders like `dockerfiles`, `docs`, `examples/docker-compose`, `lab`, `software`, `start_script`, and files like `.gitignore`, `CODE_OF_CONDUCT.md`, `CONTRIBUTING.md`, `LICENSE`, `README.md`, `build.cfg`, and `build.sh`.

About
HCL Domino Docker Container image build scripts
opensource.hcltechsw.com/domino-cont...
domino
Readme
Apache-2.0 license
Code of conduct
64 stars
28 watching
38 forks

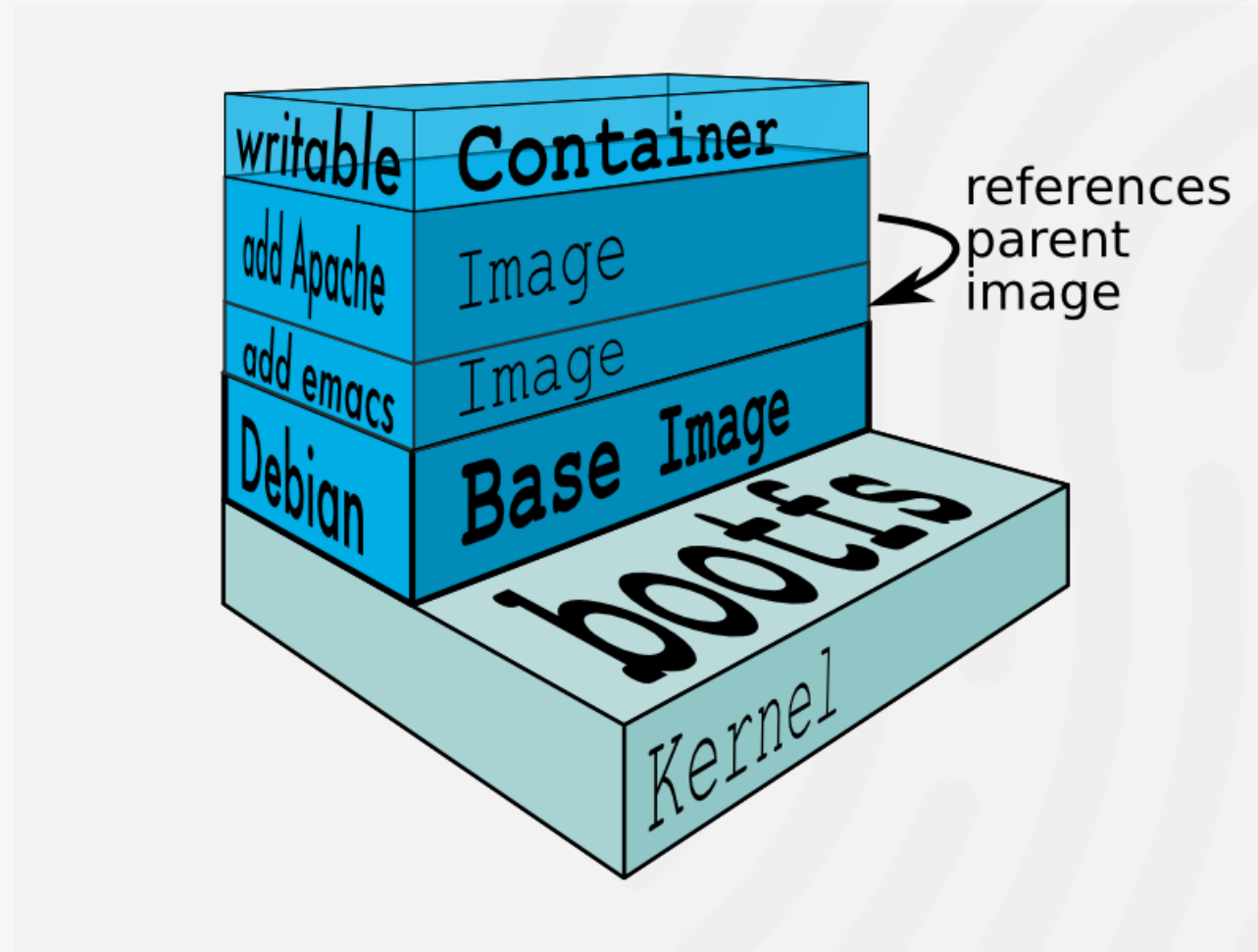
Contributors 10

Languages
Shell 98.2%
C 1.7%
Makefile 0.1%

Domino Docker Containers
This project contains build scripts for HCL Domino Docker/Container images via [dockerfiles](#). The repository provides the utilities to build HCL Domino Server with the latest software or specific version in a Docker/Container image. There are separate folders within this repository for Domino add-on HCL products like Traveler and HCL Domino Volt as well.



Buildup of a Container



Which Operating Systems are supported?

▶ HCL Domino System requirements

Operating Systems

OS	Hardware	Bitness
Windows Server 2016, 2019, 2022 (All editions)	x86-64	64-exploit
IBM AIX 7.2 TL1+	Power8, Power9	64-exploit
IBM i 7.3, 7.4	Power8, Power9	128-exploit
Red Hat Enterprise Linux (RHEL) Server 7.0		64-exploit
CentOS 7.4+, 8.0 (non-Stream version)	x86-64	64-exploit
RHEL/CentOS 7.5 Linux-equivalent OS	Equivalent OS with the following kernel: kernel 3.10.0-693 x86_64 or higher 3.x kernel glibc 2.17-222 x86_64 or higher libstdc++-4.8.5-28 x86_64 or higher	64-exploit
RHEL/CentOS 8.0 Linux-equivalent OS	Equivalent OS with the following kernel: kernel 4.18 x86_64 or higher 4.x kernel glibc 2.28 x86_64 or higher libstdc++-8.2.1 x86_64 or higher	64-exploit
SUSE Linux Enterprise Server (SLES) 12.2, 15.0	x86-64	64-exploit

CentOS Stream not supported?

CentOS Stream *is* supported

Which Operating Systems are supported (2)?



IBM i 7.3, 7.4	Power8, Power9	64-exploit, 128-bit pointers
Red Hat Enterprise Linux (RHEL) Server 7.4+, 8.0+	x86-64	64-exploit
CentOS 7.4+	x86-64	64-exploit
RHEL 7.5 Linux-equivalent OS	Equivalent OS with the following kernel/packages: kernel 3.10.0-693 x86_64 or higher 3.x kernel glibc 2.17-222 x86_64 or higher libstdc++-4.8.5-28 x86_64 or higher	64-exploit
RHEL 8.0 Linux-equivalent OS	Equivalent OS with the following kernel/packages: kernel 4.18 x86_64 or higher 4.x kernel glibc 2.28 x86_64 or higher libstdc++-8.2.1 x86_64 or higher	64-exploit
SUSE Linux Enterprise Server (SLES) 12.2, 15.0	x86-64	64-exploit
SUSE Linux Enterprise Server (SLES) 15 SP3 Linux-equivalent OS	Equivalent OS with the following kernel/packages: kernel 5.3.18 x86_64 or higher 5.3 kernel glibc-2.31 x86_64 or higher libstdc++-6-11 x86_64 or higher	64-exploit

That's Red Hat 9!

Notes:



SELinux officially supported!

SELinux Enforcing and Targeted mode has been tested and is now supported for Domino installations. (No policies were applied to Domino.)



Let's look at those commands

- ▶ `git clone https://github.com/HCL-TECH-SOFTWARE/domino-container.git`
Download the latest version of the scripts to your build machine
- ▶ `./build.sh cfg`
Edit the build configuration. Enter where the software can be found
- ▶ `./build.sh domino -capi -verse -nomad`
Builds the latest version of Domino (currently Domino 12.0.1 FP1) with the Verse (2.2.0a) libraries, the C-API libraries, Nomad Web on Domino with CentOS 8 Stream as base image
- ▶ To build an older version on top of OpenSuse Leap and tag it as latest11:
`./build.sh domino 11.0.1 FP4 HF356 -from=leap latest11`
- ▶ To add the latest version of Traveler to the image:
`./build.sh traveler`



The Domino Image

Container

- Read / Write filesystem

Layer 3

- Traveler 12.0.1

Layer 2

- Domino 12.0.1 & FP1 & Verse & borg & Nomad

Layer 1

- CentOS updates + extra packages

Base Image

- CentOS 8 stream

Base images for Domino container

- ▶ Hcl Domino Docker Image - domino:latest
- ▶ Centos Stream 8 - stream8
- ▶ Centos Stream 9 - stream9
- ▶ Rocky Linux - rockylinux
- ▶ AlmaLinux - almalinux:8
- ▶ Amazon Linux - amazonlinux
- ▶ Oracle Linux - oraclelinux:8
- ▶ VMWare Photon - photon
- ▶ RedHat Universal Base Image - ubi8
- ▶ Opensuse - leap
- ▶ AstraLinux - orel:latest



Install and run a new Domino server

- ▶ Configure the base variables for your Domino server: `run: dominoctl cfg`
- ▶ If a first server, run `dominoctl setup`
- ▶ Start your server: `dominoctl start`
- ▶ Check what's happening: `dominoctl console`



The Domino Volt Image

Container

- Read / Write filesystem

Layer 4

- Volt

Layer 3

- Traveler 12.0.1

Layer 2

- Domino 12.0.1 & FP1 & Verse & borg & Nomad

Layer 1

- CentOS updates + extra packages

Base Image

- CentOS 8 stream

Convert an existing server

- ▶ Pull the image from your private registry
`docker pull <your-registry>:5000/<your-image-name>`
- ▶ Install the container scripts
`/local/github/domino-startscript/install_domino_container`
- ▶ Edit your container configuration
`dominoctl cfg`
- ▶ Run the container
`dominoctl start`
- ▶ Clean the old installation



Customising / upgrading an Image

- ▶ Skeleton directory in /opt/nashcom/startscript/build_image/
- ▶ Possibility to update base image (yum update)
- ▶ Domino_container build



The Custom Domino Image

Container

Layer 5

Layer 4

Layer 3

Layer 2

Layer 1

Base Image

- Read / Write filesystem

- Customizations / CentOS updates

- Volt

- Traveler 12.0.1

- Domino 12.0.1 & FP1 & Verse & borg & Nomad

- CentOS updates + extra packages

- CentOS 8 stream

What's new in the scripts (since Engage)

- ▶ Create a Nomad + Safelinx container with a file backend or drivers for a MySQL or MSSQL backend
- ▶ Nomad server can now be added straight to the Domino server in version 1.0.5 (still in beta). In the Domino container script this is achieved by adding `-nomad` to the build-command
- ▶ Add drivers for MySQL or MSSQL to Domino (enables HA Traveler)
- ▶ Domino Community Container Image Automation Testing – Test your Domino image before deploying it, to be sure the image is good => <https://github.com/HCL-TECH-SOFTWARE/domino-container/tree/develop/testing>
- ▶ Various additions to one-touch setup



Conclusion

- ▶ Using Domino in a container has a lot of benefits:
 - ▶ Standard installations
 - ▶ Fast installs
 - ▶ Fast updates
 - ▶ Scriptable / scheduled updates
 - ▶ Easy to convert existing servers
 - ▶ No real knowledge of containers needed due to Domino container scripts



Questions



QUESTIONS?

Use the GoToWebinar Questions Pane

Please keep all questions related to the topics that our speakers are discussing!!!

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