

Why we need DOCKER on HPE NonStop

PETER HAASE

JIT₂₀₀₀ GES. FÜR RISIKOANALYSEN MBH



Designed by Whova



Connect NonStop Technical Boot Camp 2020

Nov 15, 2020 - Nov 19, 2020

Speaking at

TBC20-047 - Why we need DOCKER on HPE NonStop

- Build and Ship any Application anywhere!

Consultant and Trainer

JiT2000 GmbH



Peter Haase

Build and Ship
any Application
anywhere!

DOCKER IS THE TOOL
TO ENABLE JUST THIS!



Expanding NonStop Opportunities – by Aligning Applications and Platforms

Attract new Applications for NonStop:
e.g. SAP, ERP, AI, ML, Analytics, and Mobile



From a Presentation by
Ron Thompson
rthompson@cail.com

Scenario	Build	Ship
1	Not NSK	OSS
2	OSS	Not NSK
3	Guardian	Not NSK
4	Not NSK	Guardian

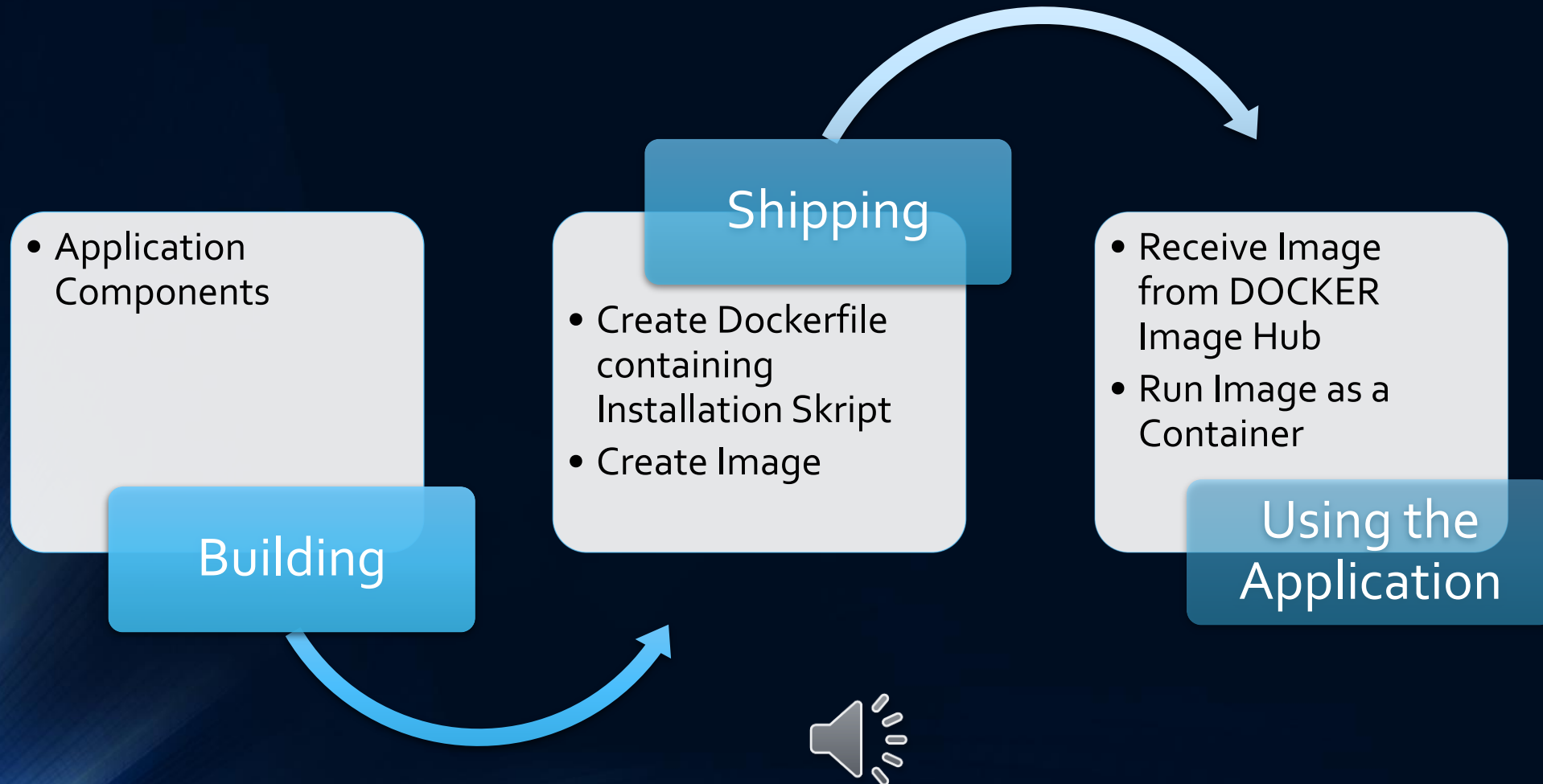
**Not NSK =
Not NonStop Kernel
Platforms:**

- UNIX / LINUX
- Windows
- MAC OS



Platform	Docker EE	Docker CE
Ubuntu	•	•
Debian		•
Red Hat Enterprise Linux	•	
CentOS	•	•
Fedora		•
Oracle Linux	•	
SUSE Linux Enterprise Server	•	
Microsoft Windows Server 2016	•	
Microsoft Windows 10		•
macOS		•
Microsoft Azure	•	•
Amazon Web Services	•	•

DOCKER – Build and Ship



Docker and Microservices

The best fit for Docker are applications that have been broken down into microservices — small, composable pieces that work together — preferably without a GUI and ideally with only one Docker container per microservice. This setup makes use of encapsulation, scalability, distribution, availability and other Docker advantages.



Simone Stieger and Lutz Kiefer:
“How to get the most out of Docker technology”
DXC Technology

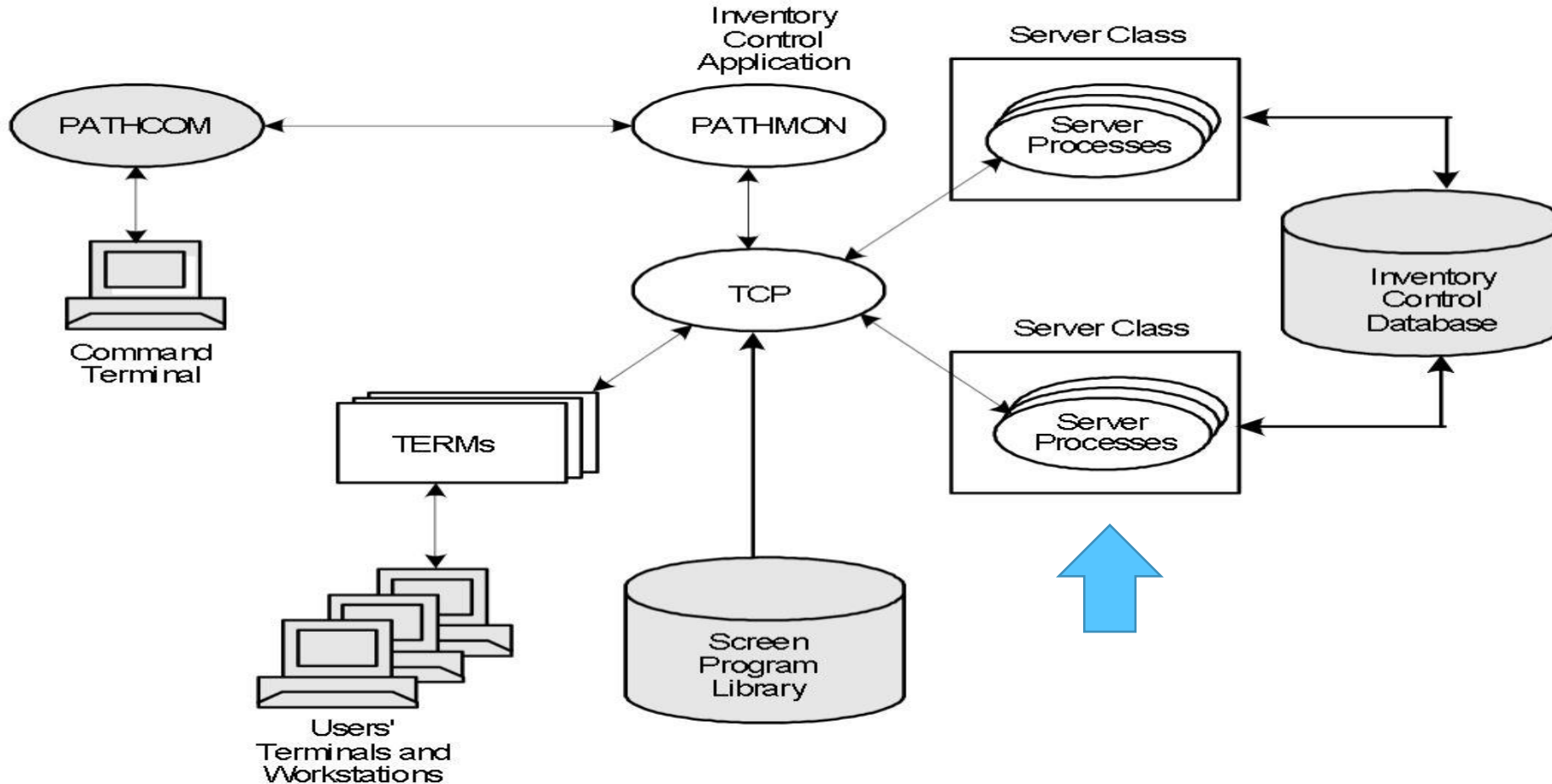
NonStop Applications and Microservices

Microservices are an architectural approach to application development. In a microservice environment the application is built as a collection of small services. Each service has a unique and well-defined role. ... Microservices can be independently deployed, upgraded, scaled and restarted, without affecting other services in the ecosystem. Hang on, that sounds a lot like NonStop TS/MP (Pathway to most of us) doesn't it?



Andrew Price
Director of Sales and Business Operations
NuWave

Pathway Overview



A Server Class manages Server Processes from the same object which contains one or more services.

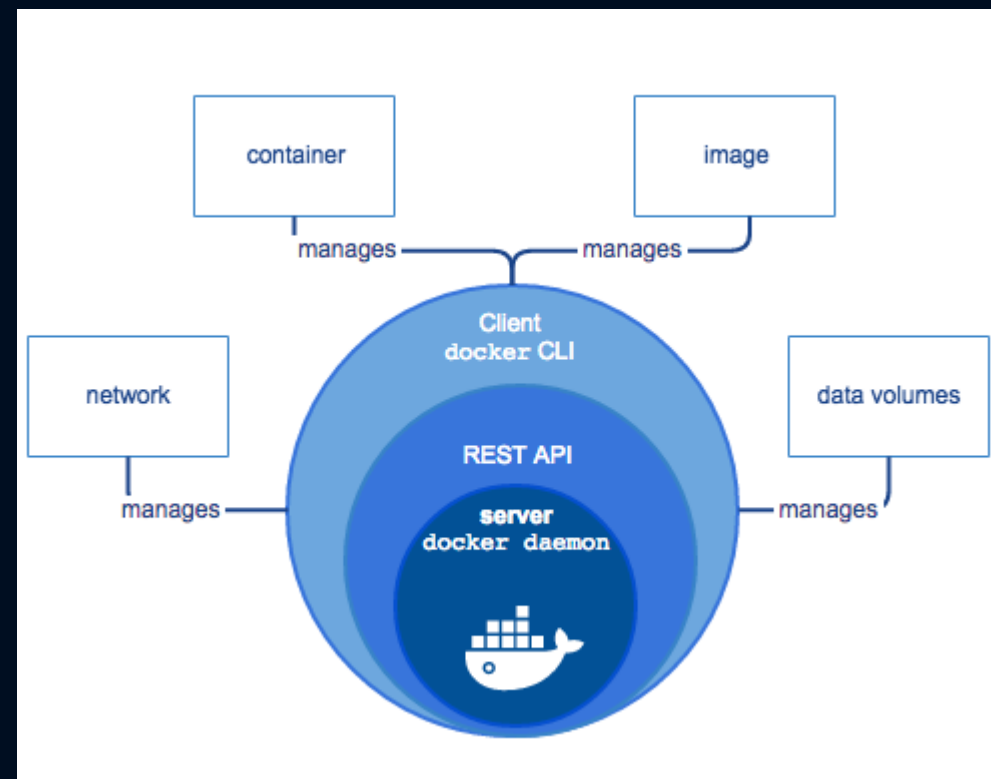
DOCKER vs. Virtual Machine

- Hypervisor similar to DOCKER Engine
- DOCKER Image without Operating System
- WINE on POSIX similar to DOCKER Container



DOCKER Engine

- <https://github.com/docker/engine>
- docker daemon implemented in GO
- Go is a compilable programming language.
Go was developed by employees of Google Inc.
The designs came from Robert Griesemer, Rob Pike and Ken Thompson.
- GO Compiler for Linux, macOS, Windows and FreeBSD
 - Gc – official Compiler
 - GCCgo – GNU Compiler Collection
- docker daemon Module
- <https://github.com/opencontainers/runc>



The five biggest Challenges for Container Storage

- Maintaining Security
- Data Loss Prevention
- Disaster Recovery
and Business Continuity
- High Performance
- Scalable Capacity

2019 CONTAINER ADOPTION SURVEY

by PORTWORX and AQUA SECURITY

published by MARKET CUBE



Ideas for Implementing Scenario 1 - Optimistic Approach

Build on Not NSK
and
Ship to OSS



- **Port** a GO Compiler to OSS
- **Implement** DOCKER Engine on POSIX
- Receive Image
- **Implement** Pathway Service with REST APIs to DOCKER daemon
- Run Container from Image by starting it as companion to a Pathway Server Process

Reason to switch - Franz König, HPE:
*"Hi Peter. Good talk and analysis.
However, I am afraid it misses the key point –
the strict dependency of Docker on the Linux kernel!"*

Ideas for Implementing Scenario 1 – Realistic Approach

Build on Not NSK

and

Ship to OSS



- **Implement low-level run time environment runC directly on OSS**
- **Receive Image**
- **Implement Pathway Service with APIs to runC**
- **Run Container from Image by starting it as companion to a Pathway Server Process**

Container Management

Kubernetes

- Platform for automated deployment, scaling, load balancing, logging, and monitoring of application containers on distributed hosts

versus

Pathway/XM



- Centralized configuration and management interface with automatic load balancing, online reconfiguration and replacement of servers, simplified object naming, and an increased overall system capacity

Why containers will drive transformations in the 2020s

Every decade or so, a new IT infrastructure model barges onto the scene and changes the way organizations use technology.

In the 1990s, client/server architectures put computing resources in the back room and doled them out as needed. In the 2000s, virtual machines (VMs) created the ability to emulate one computer's resources on another. In the 2010s, cloud hit big, helping companies become more agile and cost focused.

Now that we've entered a new decade, what model will dominate the conversation? Based on current trends and expert forecasts, it's clear that **The 2020s will be defined by containers and microservices.**



Robert Christiansen
CTO Office
Hybrid IT at HPE

HPE Synergy

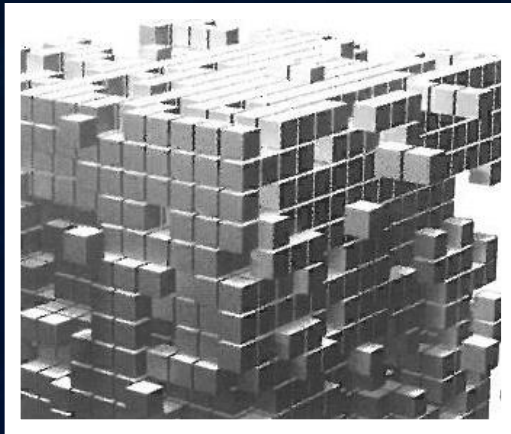
Future first. Ready now.

Run innovative containerized micro-services from Docker on the world's first composable infrastructure platform.



Build your competitive edge. Learn more at hpe.com/partners/docker

JiT2000
Ges. für
Risikoanalysen
mbH



Kirchstr. 12 - D-56820 Mesenich/Moselle - Germany

Phone +49-2673-9580050

Mobile +49-1590-642 8136

Voice-Mail and Fax: +49-3212-9860123

Data Privacy

internal IT Security

Compliance Management

HPE NonStop:

Support, Programming, Software, Consulting, Training

<http://jit2000.net/>

SKYPE: ph.mesenich

