checkmk as Docker Container

CHECKMK CONFERENCE #5 - MUNICH, APRIL 29, 2019
Agenda

1. BASIC THEORY
2. PRACTICE
3. A FEW ADVANCED TOPICS
What is Docker (vs. a VM)?

Different levels of abstraction...

Docker Containers
- Isolate individual applications
- Run by a single OS kernel
- More lightweight than VM
- Created from image specifying content

Virtual Machines
- Isolate entire systems
- Own OS
- Virtualized server hardware
- Need a hypervisor
Why use checkmk as a Docker container?

- Is a must for "container-only" infrastructures
- Allows you to test things extremely quickly → no need to set up a virtual machine
Good to know: What’s inside?

- Docker Container details
  - OS: Debian 9
  - Size (packed): ≈450 MB
  - Size (unpacked): ≈1.1 GB
Good to know: Volumes and ports

**Named Volumes**
- Data should be stored in named volume
- If not, config is lost once container dies

**Port Mapping**
- Docker requires mapping from internal to external ports (-p 8080:5000)
- In practice usually abstracted by adding a proxy
Good to know: Update Procedure in 1.6

- Run-time data of the old container is persisted in the named volume
- During an update, a second container with new software is created
- The second container 'takes over' the volume of the 'old' container
- Old container is removed
**Where do I find it?**

- For the Enterprise Edition, Docker Image can be downloaded from the check_mk download portal
THEORY
Where do I find it if I am using the Raw Edition?

- Standard: Docker Hub
  - [https://hub.docker.com/r/checkmk/check-mk-raw](https://hub.docker.com/r/checkmk/check-mk-raw)
- Alternative: checkmk download portal
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Structure of the Demo

- Install checkmk Enterprise Edition in a Docker container
- Operate the checkmk Docker container
- Interact with container
- Integrate container in Distributed Monitoring
- Monitor Docker container
- Update of checkmk Docker container
DEMO
Installation
Installation

- Getting the container
  - Download tar archive
  - Import into Docker

- Starting the container
  - Docker run
  - Only one checkmk version per container

- Good practice: Immediately change password
Operation

- Using bash inside checkmk container
- Container in distributed setup
- Monitoring of distributed site
Update

- Load new image
- Stop existing container
- Start new container
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THEORY

Sending mails from a container setting

Images contain postfix MTA

Not configured per default

Need to configure mail relay host

Use option -e MAIL_RELAY_HOST='mailrelay.mydomain.com'

Add --hostname 'mymonitoring.mydomain.com' for specific mail server name
Using the Event Console

Container: Need to take into account required ports before container creation

- `p 162:162/udp` → SNMP trap
- `p 514:514/udp` → syslog UDP
- `p 514:514/tcp` → syslog TCP

Then:
As usual, call omd config, select protocols (SNMP traps, syslog UDP/TCP)
## Troubleshooting: Slow config reloads

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solutions</th>
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<tbody>
<tr>
<td>Config activation takes longer in containers (up to x15-30)</td>
<td>Workaround: Set file limit: --ulimit nofile=1024:1024</td>
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<tr>
<td>Inherent problem with Python 2 in Docker containers</td>
<td>Reduces max. number of open files</td>
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For more information...

- Please refer to the articles in the official ckeckmk handbook
  - https://mathias-kettner.de/cms_introduction_docker.html
  - https://mathias-kettner.de/cms_managing_docker.html
Thank you!

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