

Workshop

# Container

In the MS Universe



Rainer Stropek

software architects gmbh

Web

<http://www.timecockpit.com>

Mail

[rainer@timecockpit.com](mailto:rainer@timecockpit.com)

Twitter

@rstropek



**time cockpit**  
Saves the day.

# Your Host

## Rainer Stropek

Developer, Entrepreneur  
Azure MVP, MS Regional Director  
IT-Visions

## Contact

software architects gmbh  
[rainer@timecockpit.com](mailto:rainer@timecockpit.com)  
Twitter: @rstropek



# Questions for this Session

Options, options, options

When to use what?

Previews, previews, previews

What is available? What will come?

Demos, demos, demos

See things in action

Overview, not a deep-dive

# Overview

# Microsoft Containers

## Docker client on Windows

## Linux containers on Windows

[Docker Toolbox](#) (driver for Hyper-V available)

[Docker for Windows](#) (Beta)

## Windows containers on Windows

[Windows Server containers](#)

[Hyper-V containers](#)

Docker support on Windows Server 2016 and Windows 10

# Microsoft Containers

## Ready-made containers

For Linux and Windows

See [Docker Hub](#)

## Containers on Azure

Templates and drivers from Microsoft (details later)

Docker Machine with [Azure driver](#)

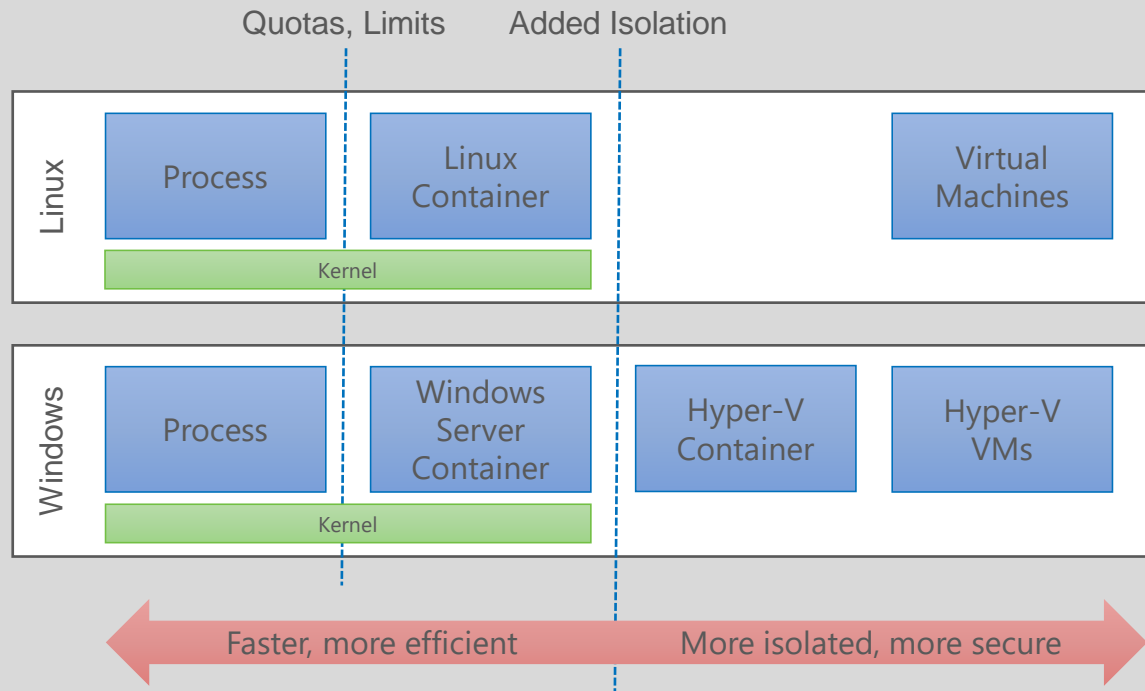
Run clusters (DC/OS and Docker Swarm) with *Azure Container Service*

## Ubuntu subsystem for Windows

Not Docker, not Hyper-V

Pico processes

# Strengths and Limits



## Windows Server vs. Hyper-V Containers

Managed almost identically  
(Docker and PowerShell)

Difference: Isolation level

More details in [MSDN](#)

Source: Mark Fussell (Microsoft), Azure Service Fabric -  
Build always-on, hyper-scalable, microservice-based cloud  
applications

# Linux on Windows

Running Linux containers on Windows



# Linux on Windows

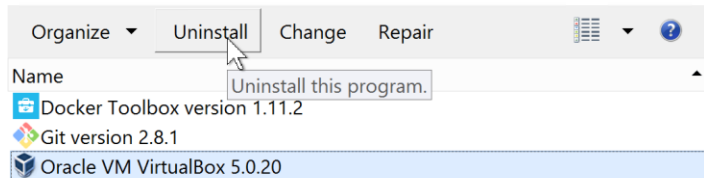
## Use Hyper-V to run Linux with Docker

Manual setup and maintenance

Use [Docker Machine](#) (included in [Docker Toolbox](#)) with [Hyper-V driver](#)

### Uninstall or change a program

To uninstall a program, select it from the list and then click Uninstall, Change, or Repair.



Use [Docker for Windows](#) (Beta)

## Run Docker client on Windows or Linux

# Demo

## Docker for Windows

### Docker for Windows UI

- Settings

- VM in Hyper-V

### Container scenarios

- Interactive container

- Volume mapping

- Port mapping

### Microsoft-provide image

- .NET on Linux

```
# Run interactive ubuntu container
docker run -it --rm ubuntu /bin/bash
```

```
# Run postgres with volume mapping
```

```
docker run -d --name postgres -v c:\temp\devopscon16:/dbdata -e
POSTGRES_PASSWORD=P@ssw0rd! -e PGDATA=/dbdata postgres
```

```
# Show content of mapped volume on Windows
```

```
# Run mongo with port mapping
```

```
docker run -d --name mongo -p 27017:27017 mongo
```

```
# Use mongo client under Windows to access mongo in container
```

```
# Run .NET Core on Linux
```

```
docker run -it --rm microsoft/dotnet /bin/bash
```

```
mkdir /demo
```

```
cd /demo
```

```
dotnet new
```

```
ls -la
```

```
dotnet restore
```

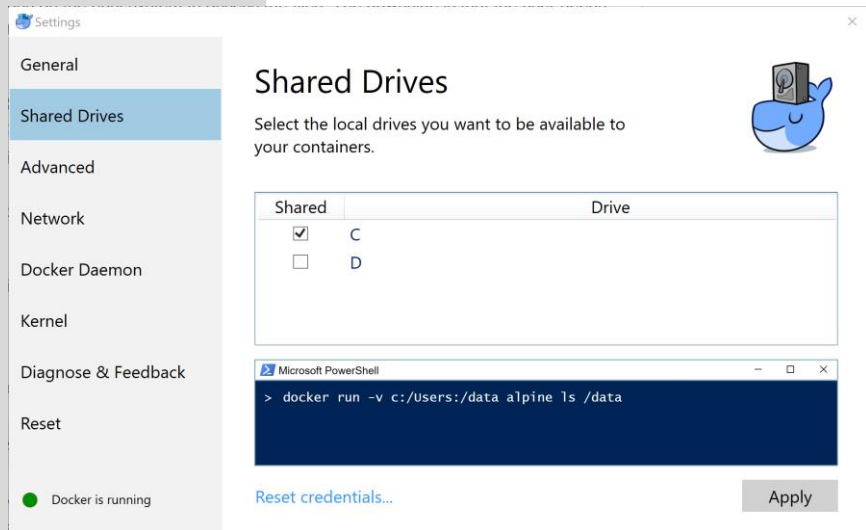
```
dotnet run
```

# Demo

## Prerequisites

Docker for Windows installed and configured

Don't forget to share drive in Docker for Windows settings!



# Windows on Windows

Running Windows containers on Windows

# Windows on Windows

## Windows Container Preview

Windows Server 2016 Preview

Windows 10 Insider Build ([Anniversary update](#))

## Windows Server Container

## Hyper-V Container

Additional isolation layer

Runs inside of Windows Nano Server VM

# Demo

## Windows Container

### Nano Server with Docker

Setup (PowerShell)  
Hyper-V

### Connect Docker client

Docker client on Host  
Remote Docker client

### Container scenarios

Interactive container  
[Dockerfiles on Windows](#)  
Volume mapping

*# Ping Docker host on Nano Server*

```
docker -H tcp://169.254.165.219:2375 info
set DOCKER_HOST=tcp://169.254.165.219:2375
docker info
docker ps -a
docker images
```

*# Run 'dir' inside a short-lived Nano Server container*

```
docker run -it --rm nanoserver cmd /C dir
```

*# Build Dockerfile, install IIS (details about IIS on Nano see*

*# <https://technet.microsoft.com/en-us/library/mt627783.aspx>)*

```
docker build -t myiis .
docker images
docker run -it --rm myiis
cd \install
dism /online /apply-unattend:.\unattend.xml
net start w3svc
```

*# On Docker host (Enter-PSSession)*

```
echo Hello > c:\temp\greeting.txt
c:\docker\docker.exe run --rm -v c:\temp:c:\somedir nanoserver
cmd /C type \somedir\greeting.txt
```

# Demo

## Prerequisites

Nano Server on Hyper-V with  
Container support

# Docker on Azure

Running containers in Azure



# Docker on Azure

## Docker support in *Azure Resource Manager* (ARM)

[Extension for Docker on Linux](#)

[Ready-made ARM-templates](#) (e.g. [Docker on Ubuntu](#))

## Azure driver for *Docker Machine*

## Azure Container Services (ACS)

## Storage

[Docker Volume Driver for Azure File Storage](#)

# Demo

## Containers in Azure

Docker Machine

Azure Driver

ARM with Docker

Using Quickstart Template

Volume driver for Files

```
docker-machine create --driver azure --azure-subscription-id  
00000000-0000-0000-0000-000000000000 doc16-demo  
# Show result in Azure Portal
```

```
# Create volume on Azure files
```

```
docker volume ls  
docker volume create -d azurefile --name myvol -o share=doc16  
docker volume ls  
docker run -it --rm -v myvol:/data ubuntu /bin/bash  
  cd /data  
  echo Hello > greeting.txt  
# Show result in Azure Portal
```

# Demo

## Prerequisites

Docker Machine installed  
Docker Driver for Azure Files  
installed and configured

# Summary

# Summary

## Microsoft ❤️ Linux and containers

Linux on Windows

Windows on Windows

All kinds of containers on Azure

## For dev/test and prod

Containers on Windows 10 for devs

Azure Container Service for prod

## Workshop

# Q&A

Thank you for attending!



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