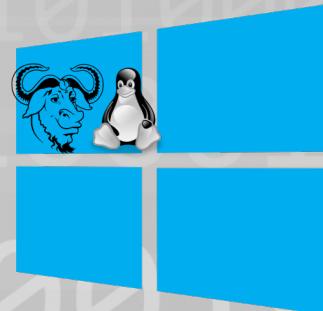


1010001010100010101

Getting started with database development with WSL2





Carlos Lopez

Microsoft Data Platform MVP MCP



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Experience

Microsoft Certified Professional 2012/2014,
2016-2017 2019

More 10 years of experience

Multi-platform DBA

Community

Guatemala SQL Server User Group –
board member

Blogger, Speaker

Fields of Experience

RDBMS: MS SQL Server, MySQL

Oracle 10-11g, NoSQL: Mongo

Linux Distros





Agenda

WSL2 Insights

What is it? – Features

Performance Facts & History

Performance tests and Benchmarking

Preparing your Environment

Configuring WSL2 , Requirements & scenarios (Containers), Preparing your SQL, IDE's and Environment.

Demo

Checking the Environment Containers – DB - OS

01

02

03

04



WSL2 Insights

What is it? – Features

What is WSL2?

Windows Subsystem for Linux v2



Complete GNU subsystem over windows

GNU/Linux distros in Microsoft Store



Executes Bash shell scripts **transparently**



Full Software install within subsystem GNU/Linux

Executes RPM packages from GNU/Linux on Windows

What is WSL2?

Windows Subsystem for Linux v2



Executes Linux binaries on Windows

Performance improvement on File System.



Full compatibility on windows kernel operative system

WSL1 vs WSL2

Feature	WSL 1	WSL 2
Integration between Windows and Linux		
Fast boot times		
Small resource foot print		
VM Management		
Full Linux Kernel		
Full compatibility O.S. calls		
Compatibility with VM Ware and VirtualBox		
Performance between OS file systems		

Performance Facts & History

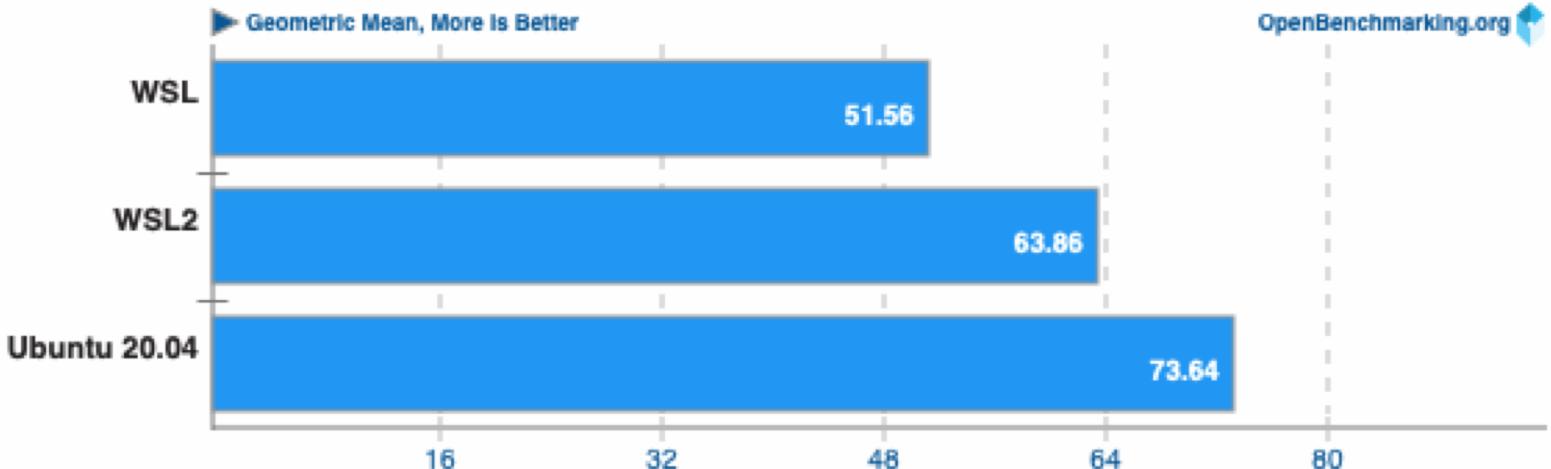
Benchmarking Tests made - Docker on Windows Story So Far...

Performance Benchmark Tests

Overall tests

Geometric Mean Of All Test Results

Result Composite



Performance Benchmark Tests

RDBMS Test

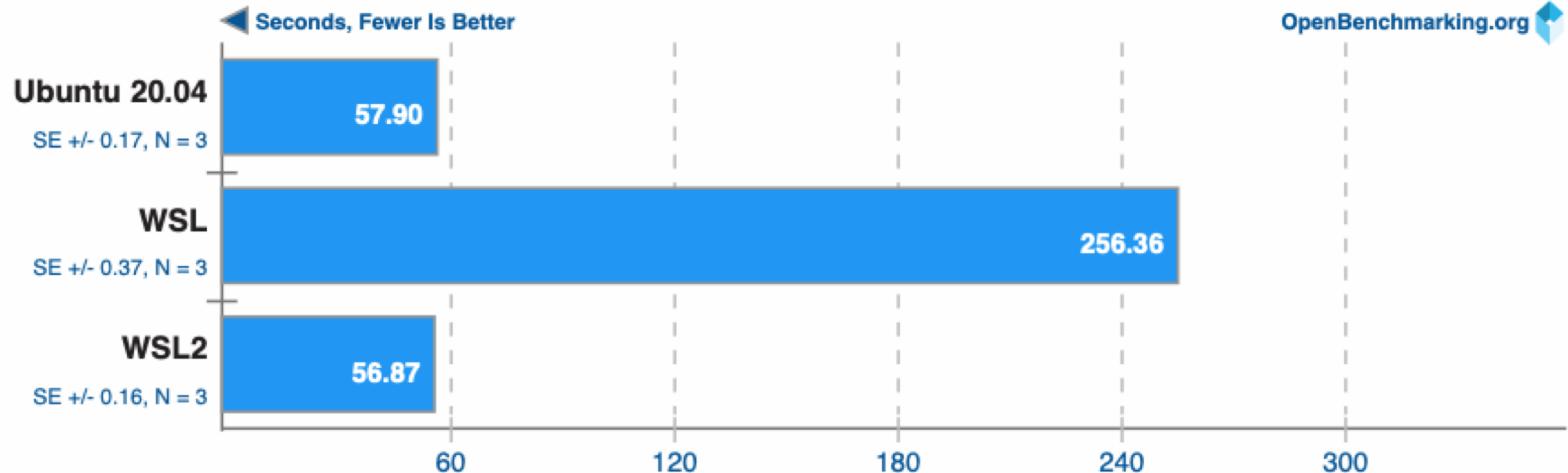
SQLite Speedtest

SQLite Speedtest v3.30

Timed Time - Size 1,000



OpenBenchmarking.org



Performance Benchmark Tests

NoSQL Tests

Redis

Redis v5.0.5

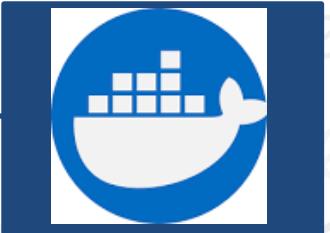
Test: SADD



Docker on Windows

The Story So Far..

2016 2017 2018 2019



Docker CE 2.0.0.3

Kubernetes 1.10.11, Linux Kernel 4.9.93, Hyper-V

Docker CE 2.0.0.0

K8s Support, Docker Compose,

Docker CE 17.09.1

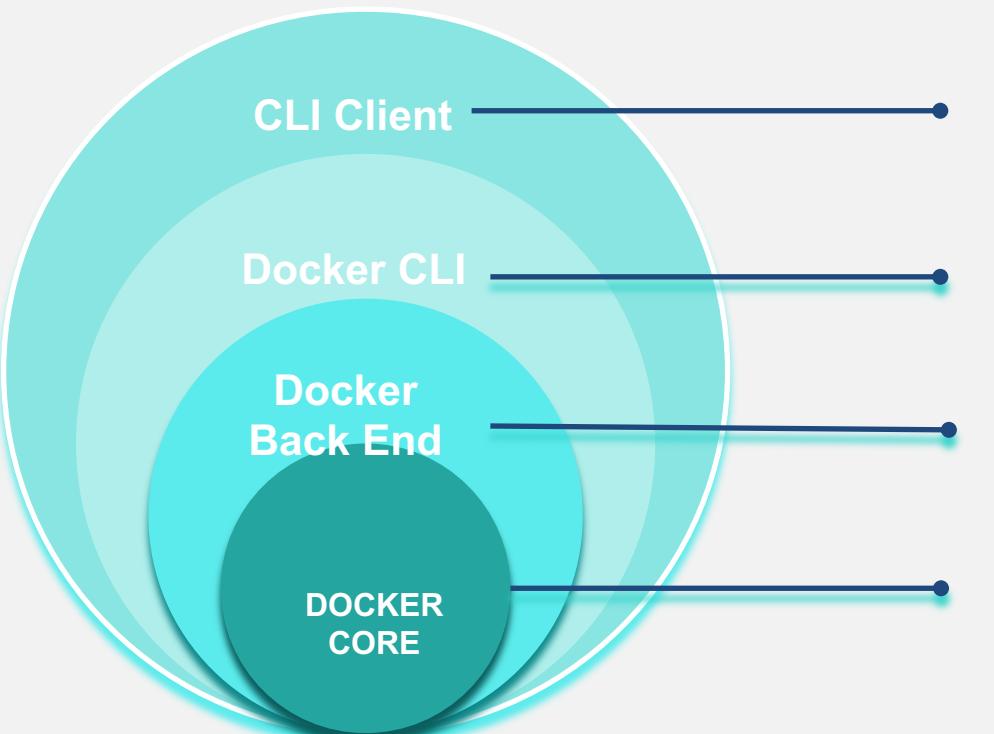
VPNKit Bridge, Fast Boot 2min

Docker for Windows 1.12.0

Docker Machine 0.8.0
Docker Compose 1.8.0

Docker on Windows

Communication Layers



CLI Client

Command Line Interface PowerShell,
Terminal

Docker CLI

Docker Interpreter interface for Command
Line Interface through PowerShell
console

Docker Back End

Set of resources to control the machine
and container hub

Docker Core

Layer that handles the service and the
service container itself.

Preparing your environment

Configuring WSL2 , Requirements (Containers),
Preparing your SQL, IDE's and Environment

Using WSL2

Requirement

Windows 10 ver. 2004 (now on Windows Home)

1. Enable PowerShell CLI

```
dism.exe /online /enable-feature /featurename:Microsoft-Windows-Subsystem-Linux /all /norestart
```

2. Install Docker Desktop

3. Configure WSL ver 2

```
wsl -l -v
```

Upgrade V2:

```
wsl --set-version (distro name) 2
```

```
wsl --set-default-version 2
```

NAME	STATE	VERSION
* Ubuntu-20.04	Running	2
docker-desktop-data	Running	2
docker-desktop	Running	2

```
PS C:\Users\Beralios> wsl -l -v
NAME          STATE    VERSION
* Ubuntu-20.04 Running   2
docker-desktop-data Running   2
docker-desktop  Running   2

PS C:\Users\Beralios> wsl
Welcome to Ubuntu 20.04 LTS (GNU/Linux 4.19.104-microsoft-standard x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

 System information as of Sat Aug 29 20:09:18 GMT 2020

 System load: 0.15           Processes:           11
 Usage of /: 1.4% of 250.98GB Users logged in:      0
 Memory usage: 6%            IPv4 address for eth0: 172.21.250.9
 Swap usage:  0%
```

Facts

Containers / No Containers

Pros	Cons
Containerized Environment	Specialized knowledge
Microservices Technology	Complexity between layers
Dev / Ops culture	Stand-Alone isolated stage coupled vs decoupled
IaC Search	

Scenario

Identified Problem

Problem:

```
ForceFlush is enabled for this instance.  
ForceFlush feature is enabled for log durability.  
System has not been booted with systemd as init system (PID 1). Can't operate.  
Failed to connect to bus: Host is down  
Attempting to start the Microsoft SQL Server service failed.
```

Force “systemd” in Ubuntu

Set adequate Run-level

Grant permissions to the binaries



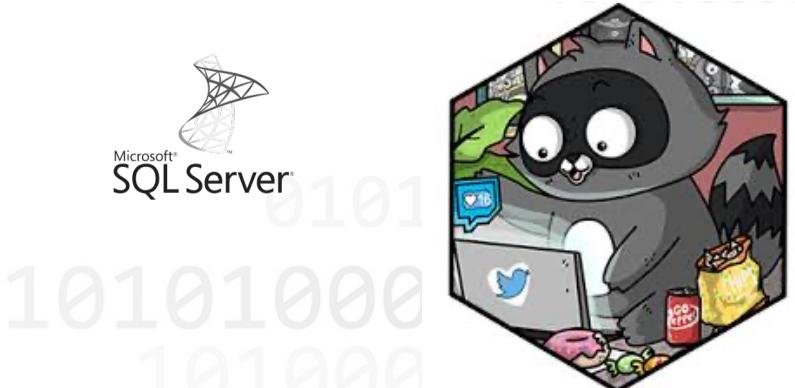
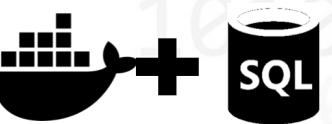
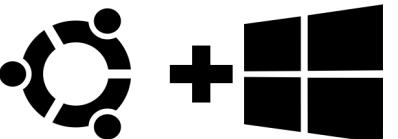
Scenario

What can I do with it?

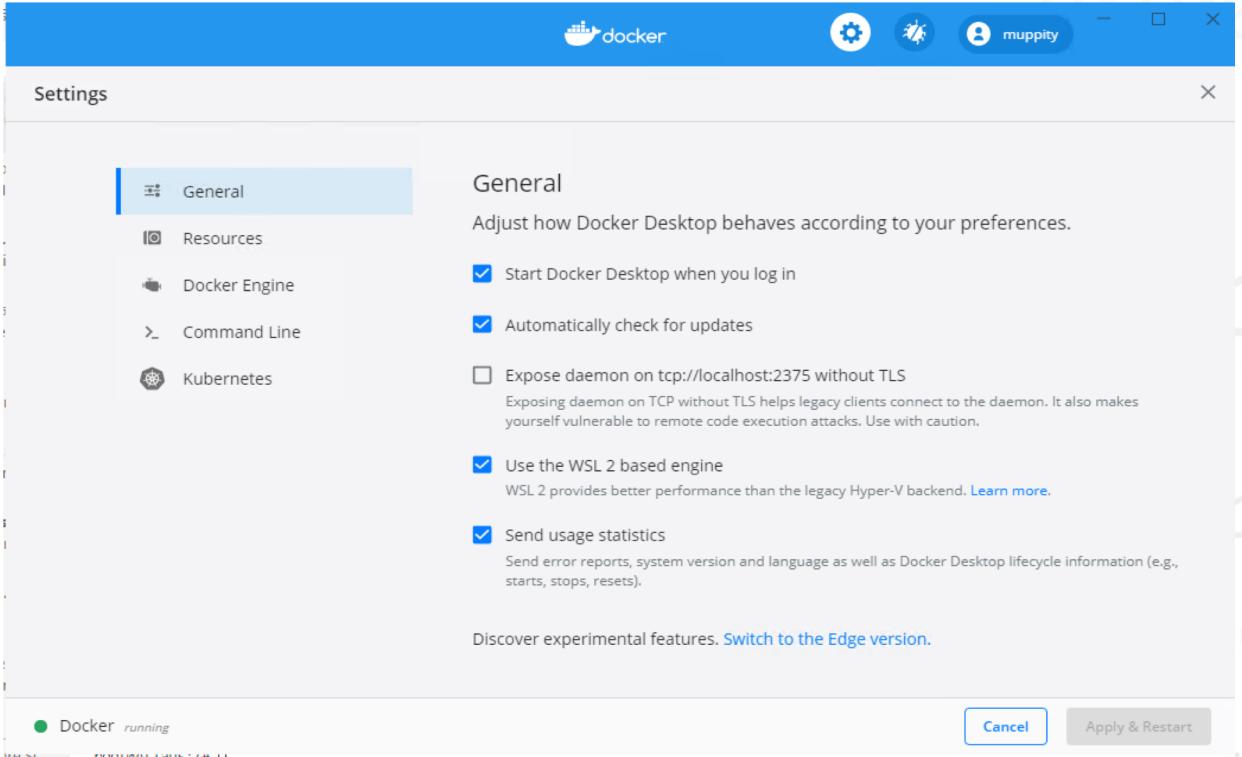
Installed Ubuntu LTS 20.04

set Docker with Ubuntu

Install SQL Server 2017 - 19 on
Ubuntu



Prepare your environment



Prepare your environment

The screenshot shows the Docker Settings window with the title "Settings". The left sidebar has a tree view with "General" expanded, showing "Resources" selected. Other options include "PROXIES", "NETWORK", "WSL INTEGRATION" (which is currently selected), "Docker Engine", "Command Line", and "Kubernetes". The main pane is titled "Resources WSL Integration" and contains the sub-section "WSL INTEGRATION". It includes a checkbox "Enable integration with my default WSL distro" which is checked, and a toggle switch "Ubuntu-20.04" which is also checked. A "Refresh" button is at the bottom of this section. At the bottom of the window, there are status indicators: "Docker running" (green dot) and buttons for "Cancel" and "Apply & Restart".

Settings

General

Resources

PROXIES

NETWORK

WSL INTEGRATION

Docker Engine

Command Line

Kubernetes

Resources WSL Integration

Configure which WSL 2 distros you want to access Docker from

Enable integration with my default WSL distro

Enable integration with additional distros:

Ubuntu-20.04

Refresh

Docker running

Cancel

Apply & Restart

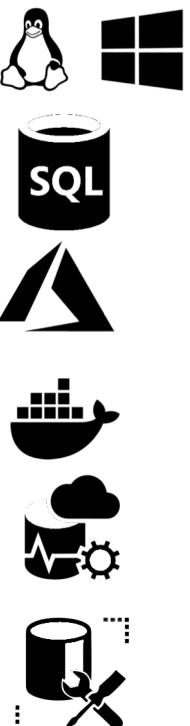
Prepare your SQL

- Define your SQL Container on a Dockerfile
- Create Volumes dedicated for SQL container for your data.
- Build and **test** your Docker Container SQL Image

- Configure your Git Repository
- Run your image as a container
- Use ACI feature pull your container into your repository



Tools and IDE's Environment



Visual Studio Code WSL2 Extension

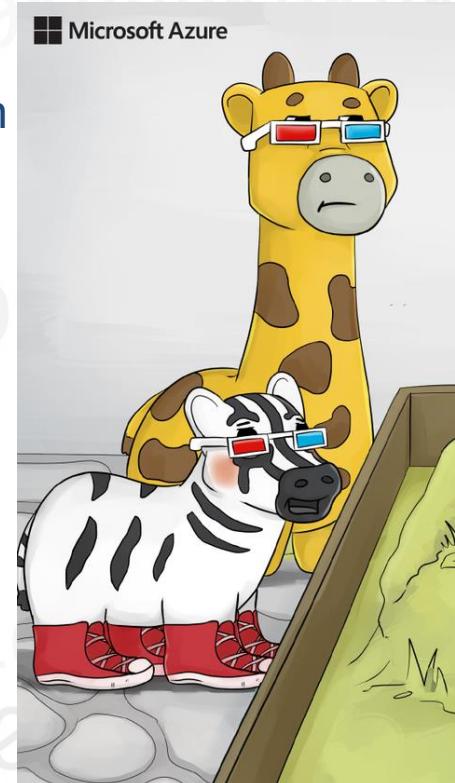
SQL Server VSC Extension

Azure CLI Tools

Docker VSC Extension

Azure Data Studio

SSMS





Demo

Hovering the tool





minikube



podman



Important Notes

WSL2 it's a best choice to manage Docker SQL Containers Windows

WSL2 file system management improves substantially the SQL Containers I/O on Windows

Always dedicate volumes for your SQL Container Data



Q / A

Questions?



Material



Github

<https://github.com/Muppity/Presentations-Material>

Docker, Kubernetes Resources

https://hub.docker.com/_/microsoft-mssql-server

[Ubuntu on WSL2](#)

[Microsoft WSL2 Guide](#)

[WSL2 Complete Benchmark Report](#)

[phoronix.com Performance for WSL vs WSL2](#)

Simon Ferquel, wsl2 blog



Social Networks



/carlos-lopez-taks



@CarlosLopezDBA



Thank you!

