Creating Vagrant development machines for MariaDB

How To and Best Practices

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$ whoami

Hi, I'm Federico Razzoli from Vettabase Ltd

Database consultant, open source supporter,
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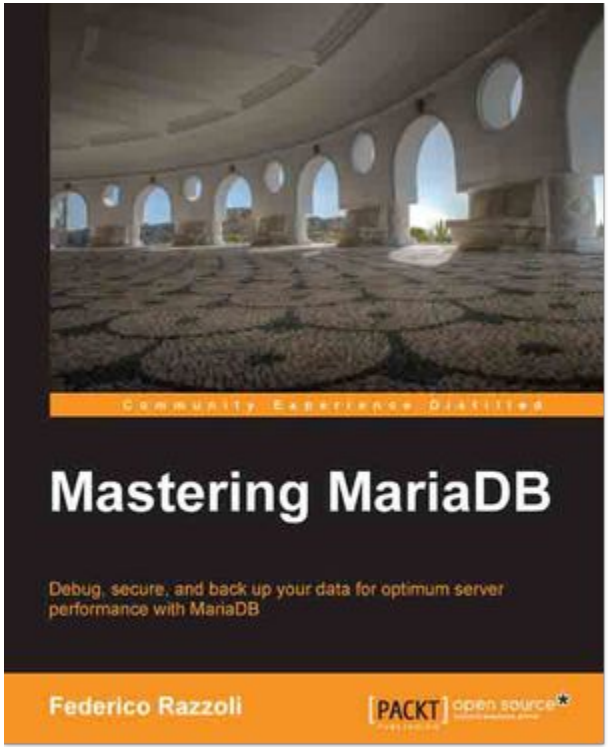

MariaDB KB

Vettabase is contributing contents to the MariaDB KnowledgeBase:

Automated MariaDB Deployment and Administration

https://mariadb.com/kb/en/automated-mariadb-deployment-and-administration/

Examples

Examples from this talk are from:

github.com/Vettabase/vagrant-mariadb-examples

- It is a working example
- Provisioning with Shell or Ansible, check the README
- Check the helper tools

Good Practices

WARNING: I have opinions

Development machines principles

- They should be as similar to production as possible
  - "Works on my laptop" should mean "works in production"
  - Software packages and versions should be the same
- But they should cost much less than production
  - Setting up servers identical to production for each employee is unreasonable
  - Usually, a single VM with a server and the DB is enough
  - Using MS's from staging is fine, as long as tests won't destroy all data
- And they shouldn't stay in the way
  - On new employee onboarding, it's fine to use some time to setup dev VMs properly
  - During a normal workday, it's not

Vagrant Machines

- VMs or containers? Choose what you use in production
- Use one machine
  - Until there are reasons to use more

MariaDB for Development

Recommendations for MariaDB development instances:

- Same version as production (10.5.x)
  - Note for MySQL users: MySQL doesn't use semantic versioning anymore!
- Same variables that affect queries
- Extra tools / views / settings for easy debugging and to identify performance problems before they reach production

Identical variables

- sql_mode
- old_mode
- max_allowed_packet
- character_set_*
- collation_*
- tx_isolation
- lower_case_table_names
- innodb_strict_mode
- updatable_views_with_limit

Extra settings for troubleshooting

This is a checklist. Find examples in the repository.

- Log all queries into the Slow Log
- SQL Error Log
- userstat = 1
- performance_schema = 1
- Informational views
- pt-duplicate-key-checker from Percona Toolkit

Vagrantfiles

Vi / Emacs options

```
# -*- mode: ruby -*-
# vi: set ft=ruby :
```

Vagrantfile Structure


```
BOX = ENV["BOX"] || "ubuntu/bionic64"
Vagrant.require_version ">= 2.2.14"

Vagrant.configure("2") do |config|
    # set Vagrant options
    config.vm.box = BOX
    ...

    config.vm.provider "virtualbox" do |vb|
        # set provider-level options
        ...
    end
    config.vm.provider "vmware_fusion"

    config.vm.provision :shell, path: "bootstrap.sh"
end
```

Provider: `virtualbox`

```
config.vm.provider "virtualbox" do |vb|
    vb.customize ["modifyvm", :id, "name", "lamp"]
    vb.customize ["modifyvm", :id, "--memory", 1024 * 4]
    vb.customize ["modifyvm", :id, "--cpuhotplug", "on"]
    vb.customize ["modifyvm", :id, "--cpus", "2"]
    vb.customize ["modifyvm", :id, "--vram", "4"]
end
```

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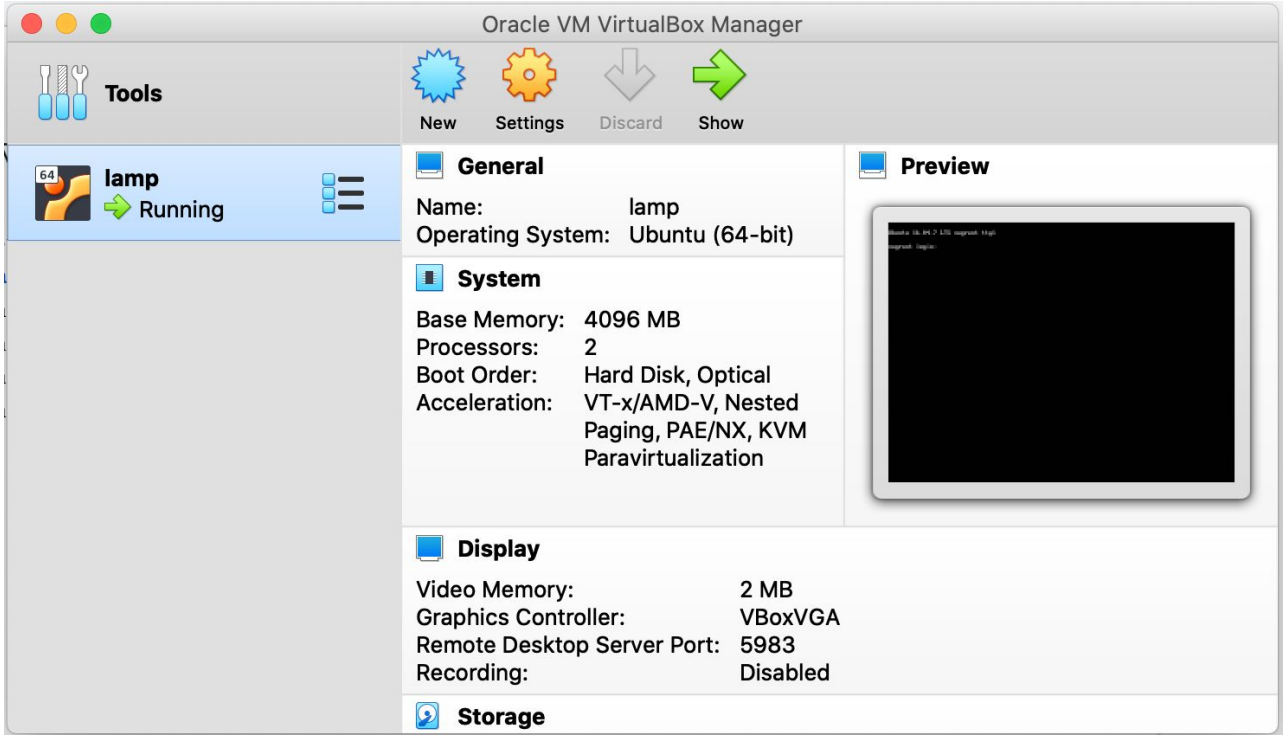

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end
```

```
VBoxManage modifyvm "VM name"  --plugcpu 1
VBoxManage modifyvm "VM name"  --unplugcpu 1
```

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end
```

Provisioners

```
Vagrant.configure("2") do |config|
    ...

    config.vm.provision :shell, path: "bootstrap.sh"

   # OR

    config.vm.provision "ansible" do |ansible|
        ansible.playbook = "mariadb.yml"
    end
end
```

"Uploading" files to the VM

```
- name: Upload my.cnf
  copy:
    src: ./files/my.cnf
    dest: /etc/mysql/conf.d/
```

Summary

1. Start with a single machine
2. Prefer VMs over containers
3. MariaDB variables that affect queries = production
4. Use variables in Vagrantile
5. Start with Vagrant.require_version
6. Learn some Ruby
7. Configure the provisioner (hw resources)
8. Use automation tools

Thanks for attending!

github.com/Vettabase/vagrant-mariadb-examples

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