Vagrant and Packer

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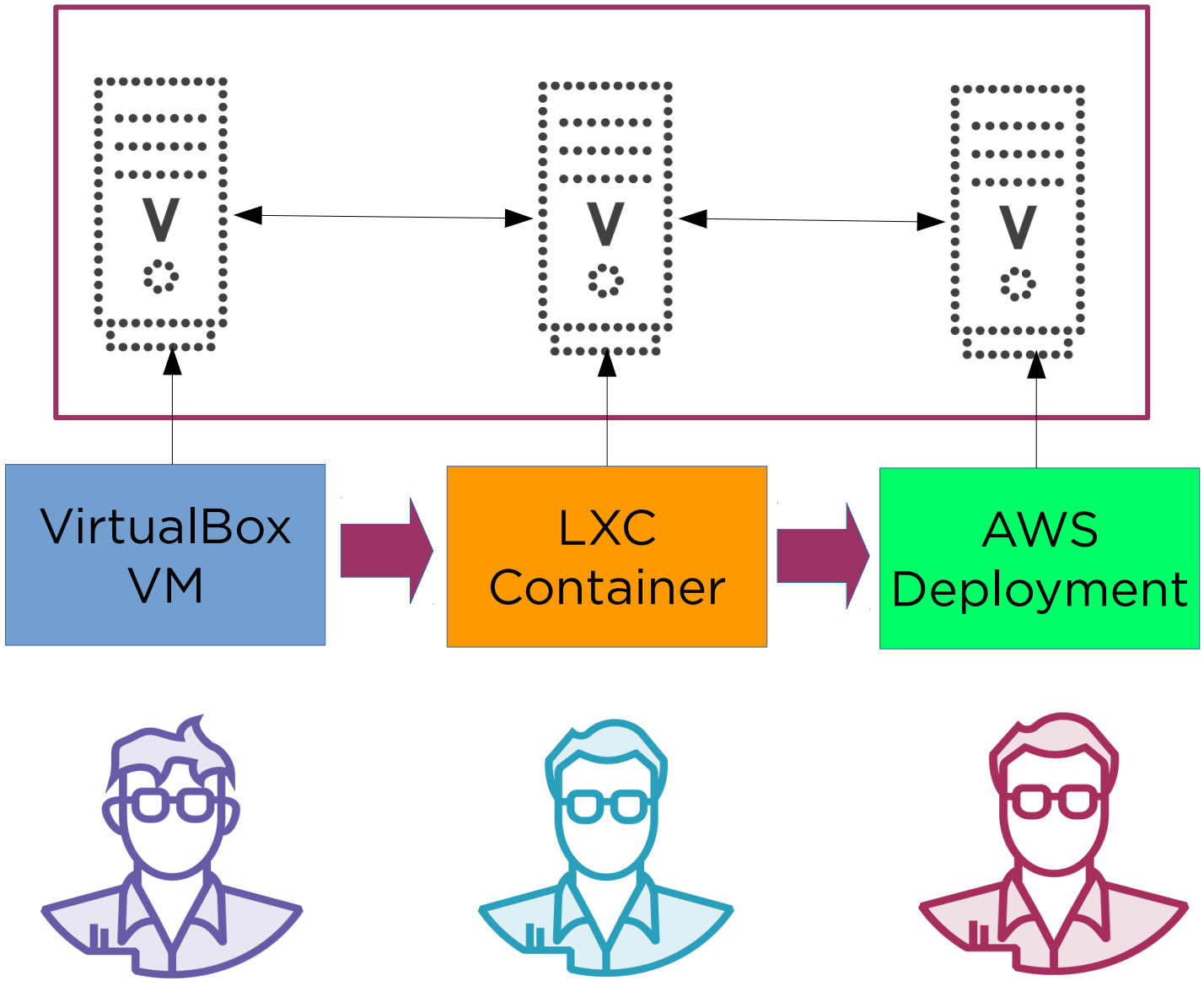
Packer

The Packer/Vagrant Process



Packer template.json file

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Vagrant

Review

Packer: artifacts and boxes

Packer scripts: builders, provisioners, post processors

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packer build example.json
packer push -name myAtlasName/mynewexample example.json
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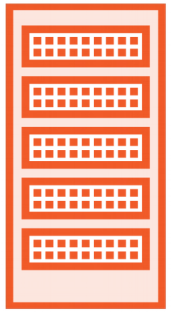
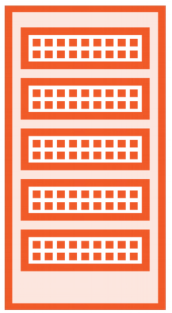
IT Deployment Design

Servers



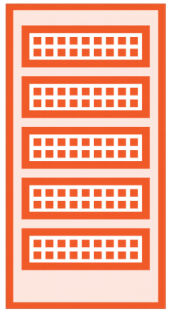
Physical
Server One



Physical
Server Two

Moodle Domains

= Moodle domain



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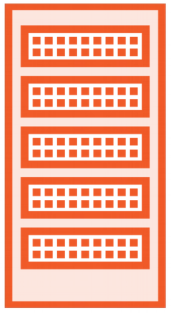
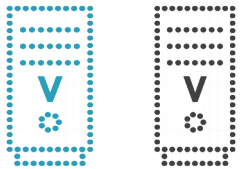
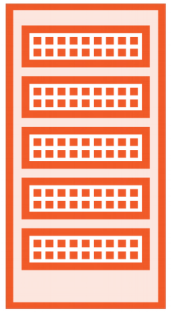


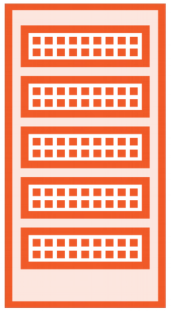
Physical
Server Two

Admin Domains



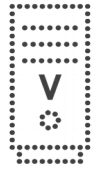


Physical Server One



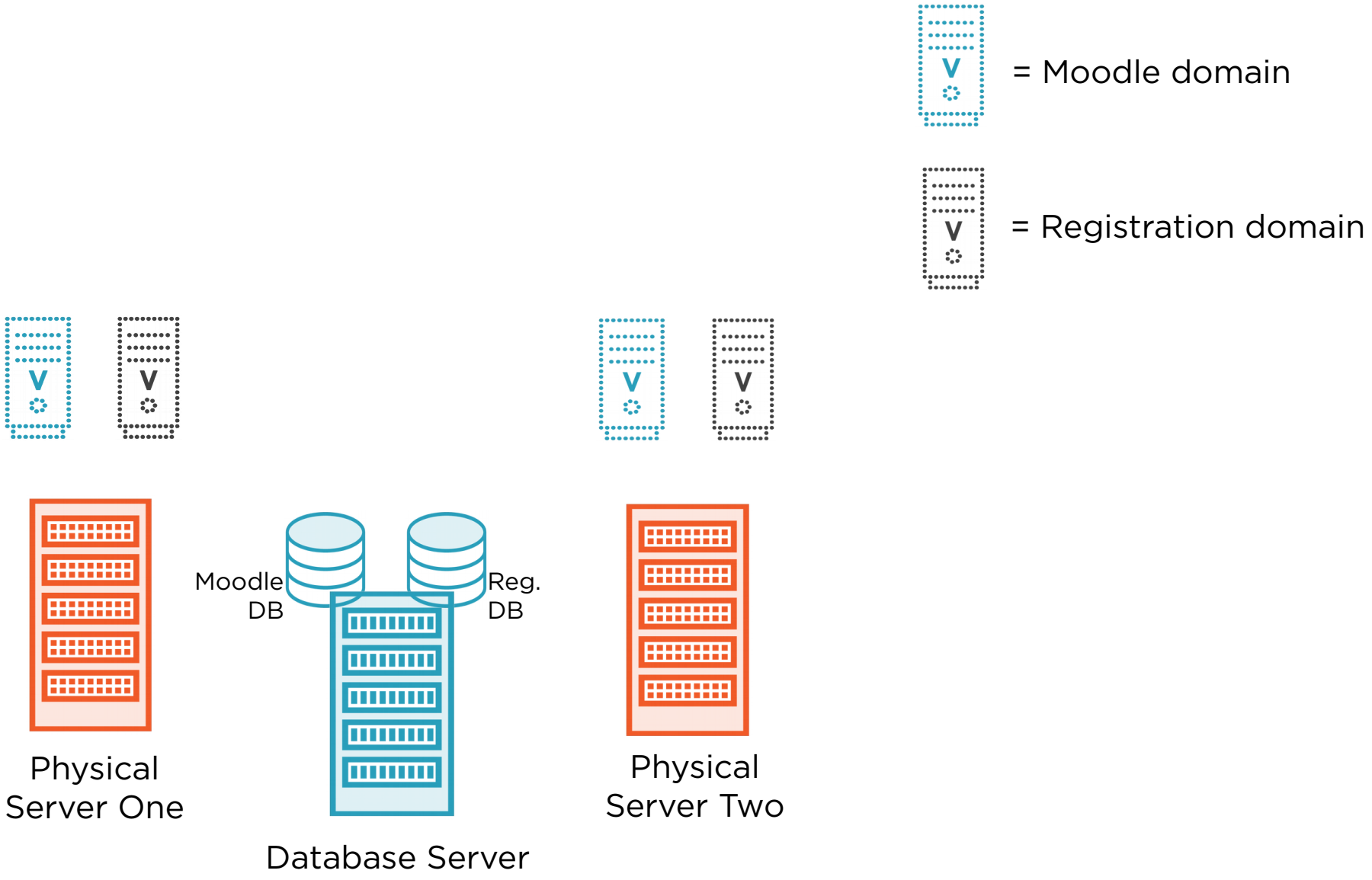
Physical Server Two

= Moodle domain

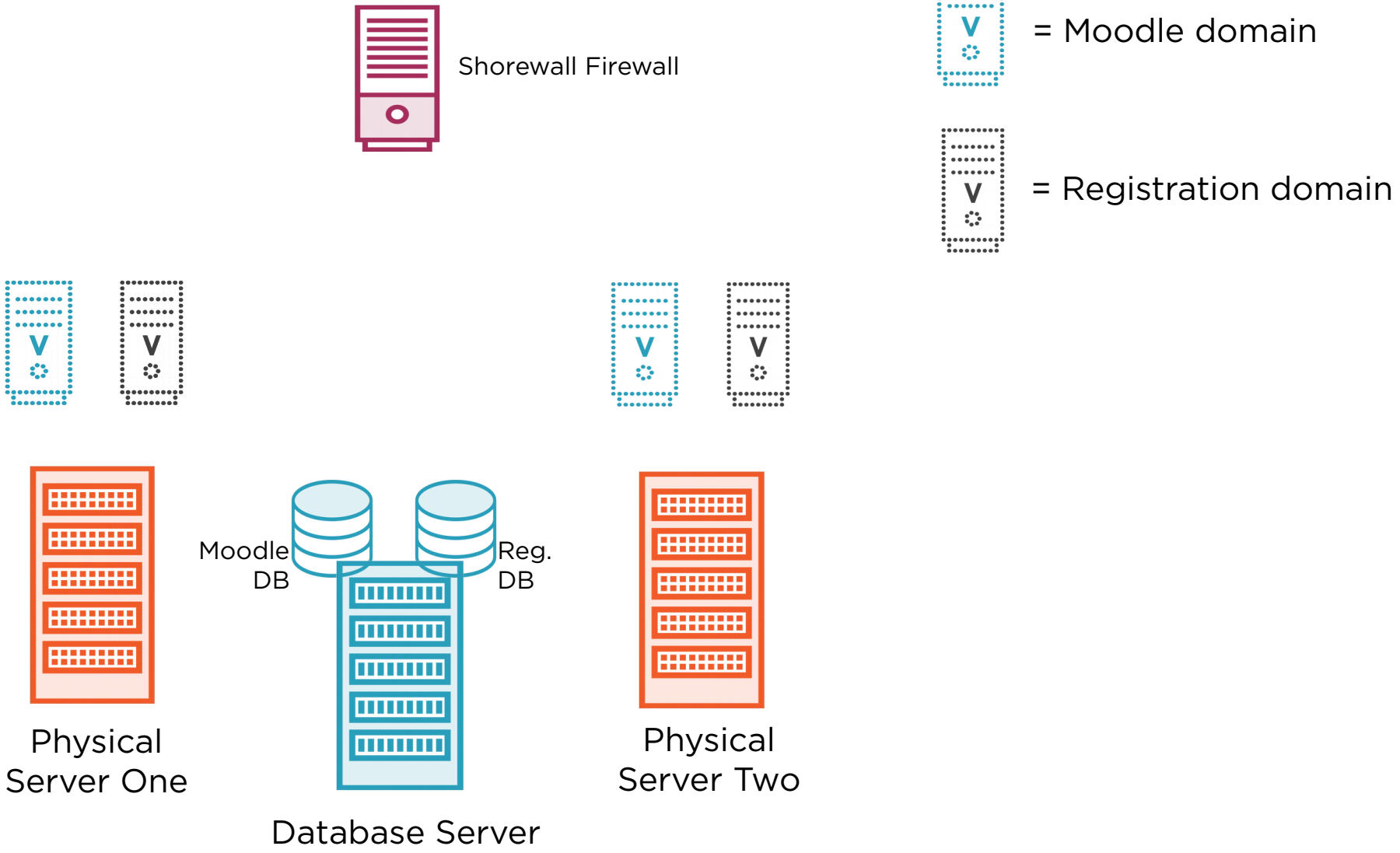


= Registration domain

Databases


= Moodle domain
= Registration domain
Moodle DB
Reg. DB
Physical Server One
Database Server
Physical Server Two

Firewall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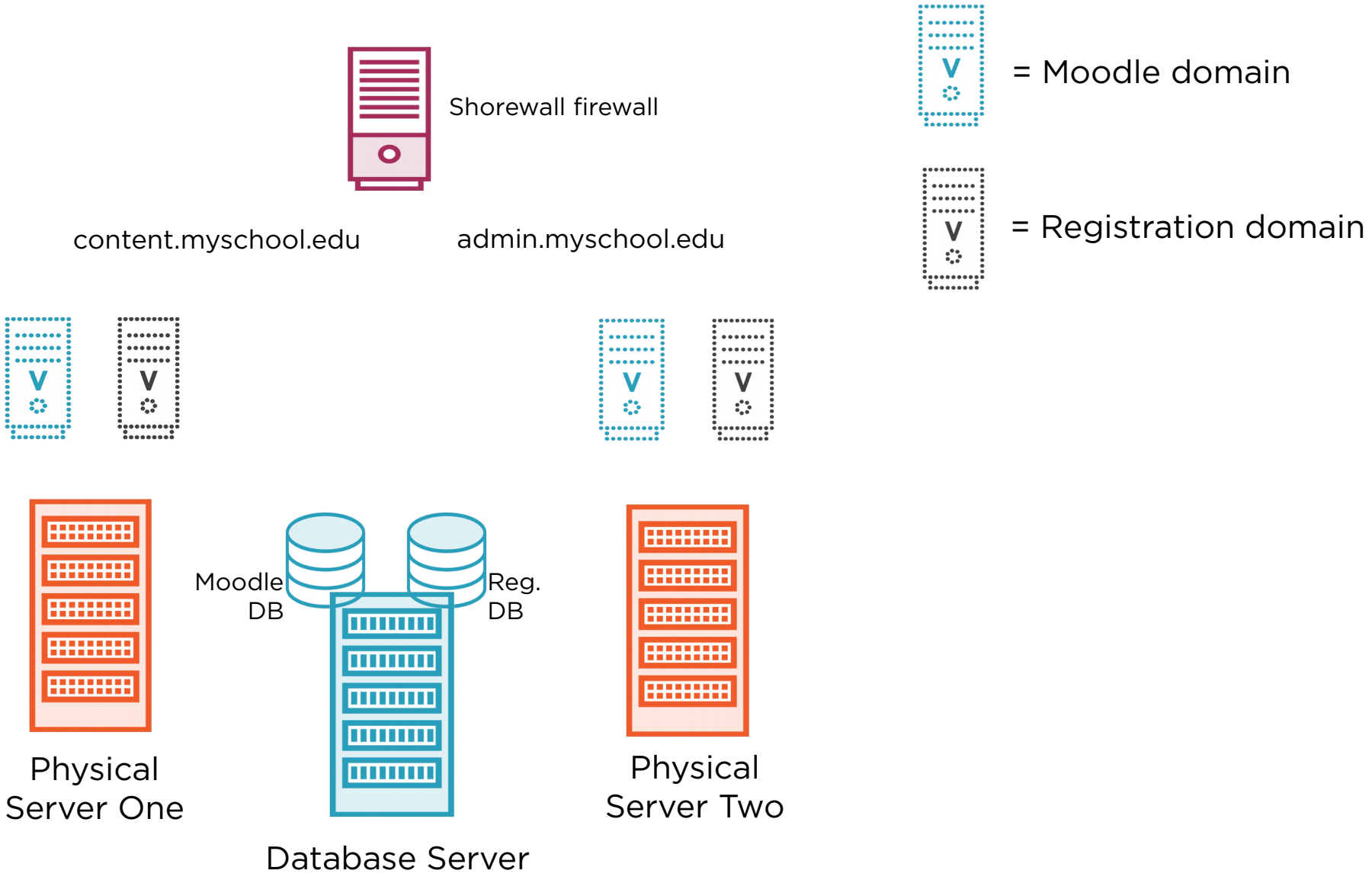
Load Balancer



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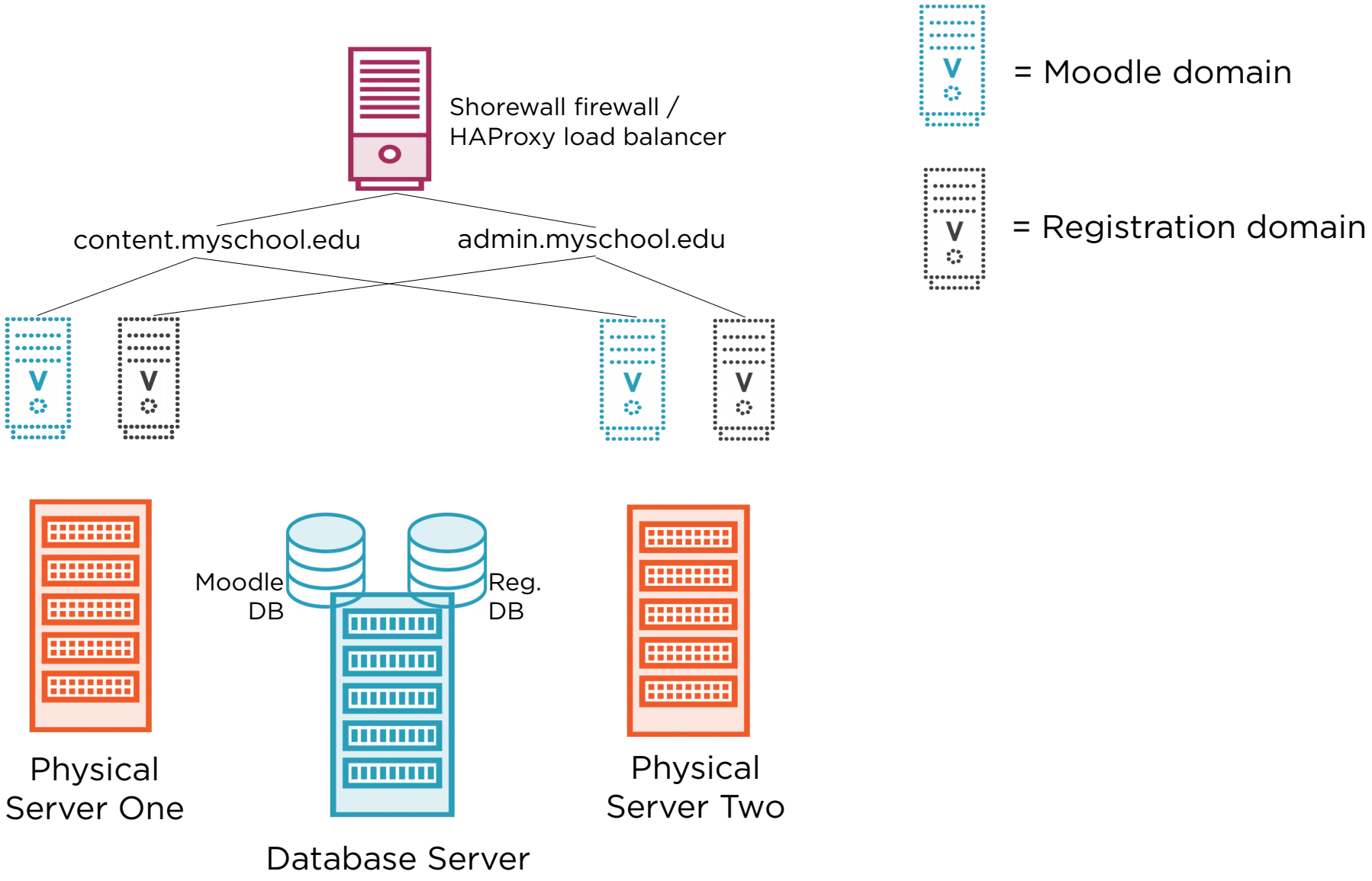
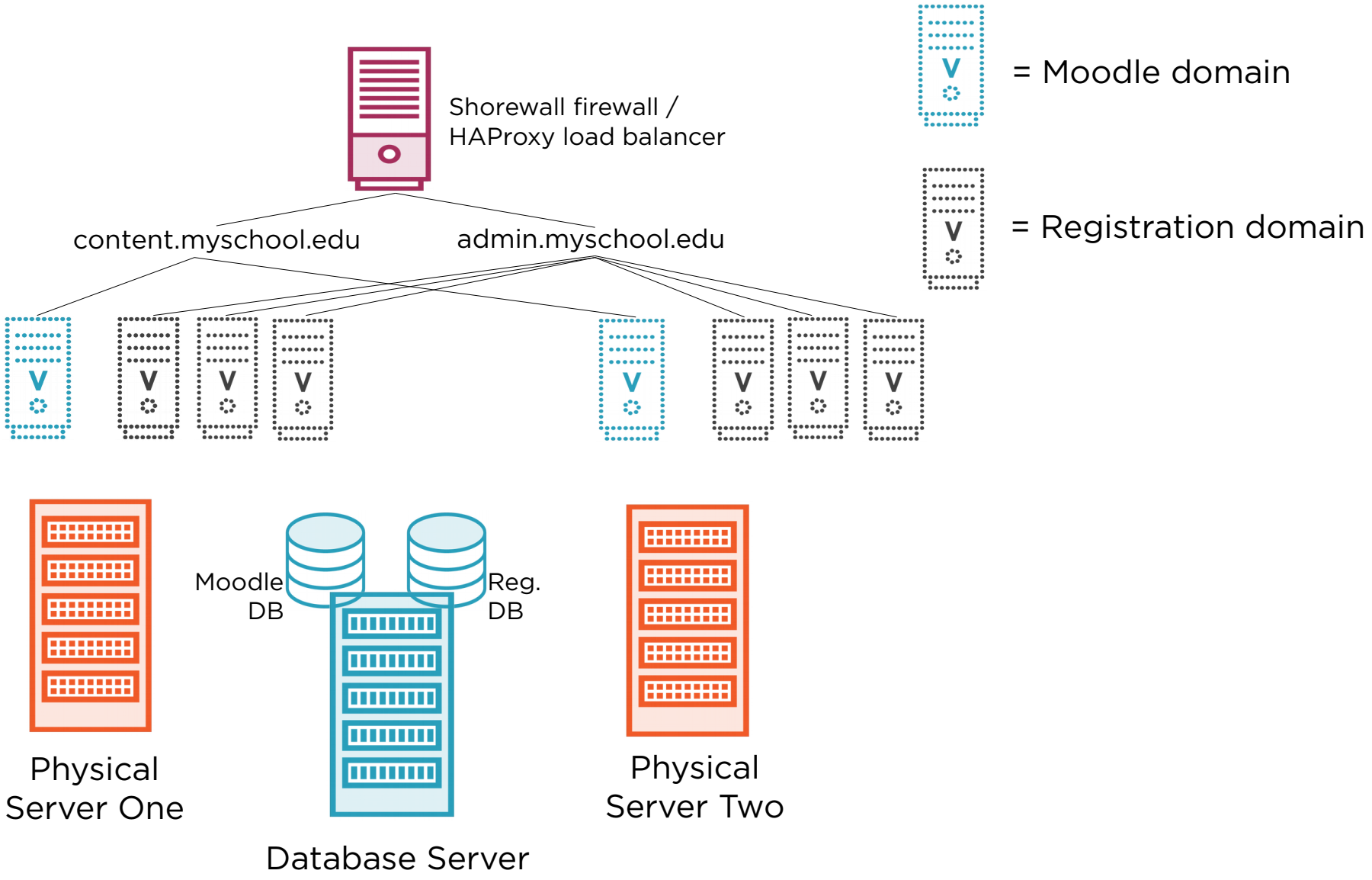


Meet Increased Admin Demand



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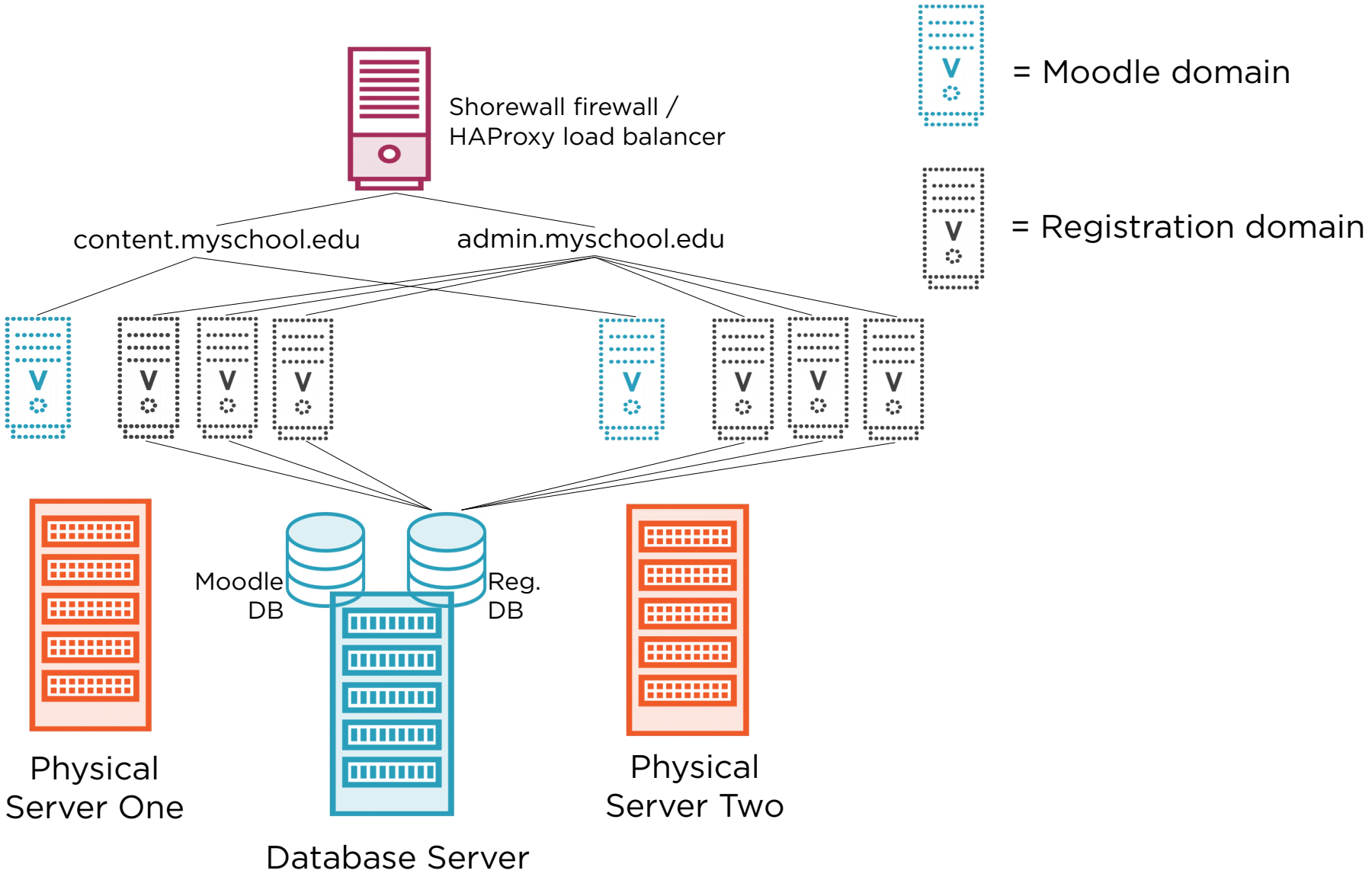

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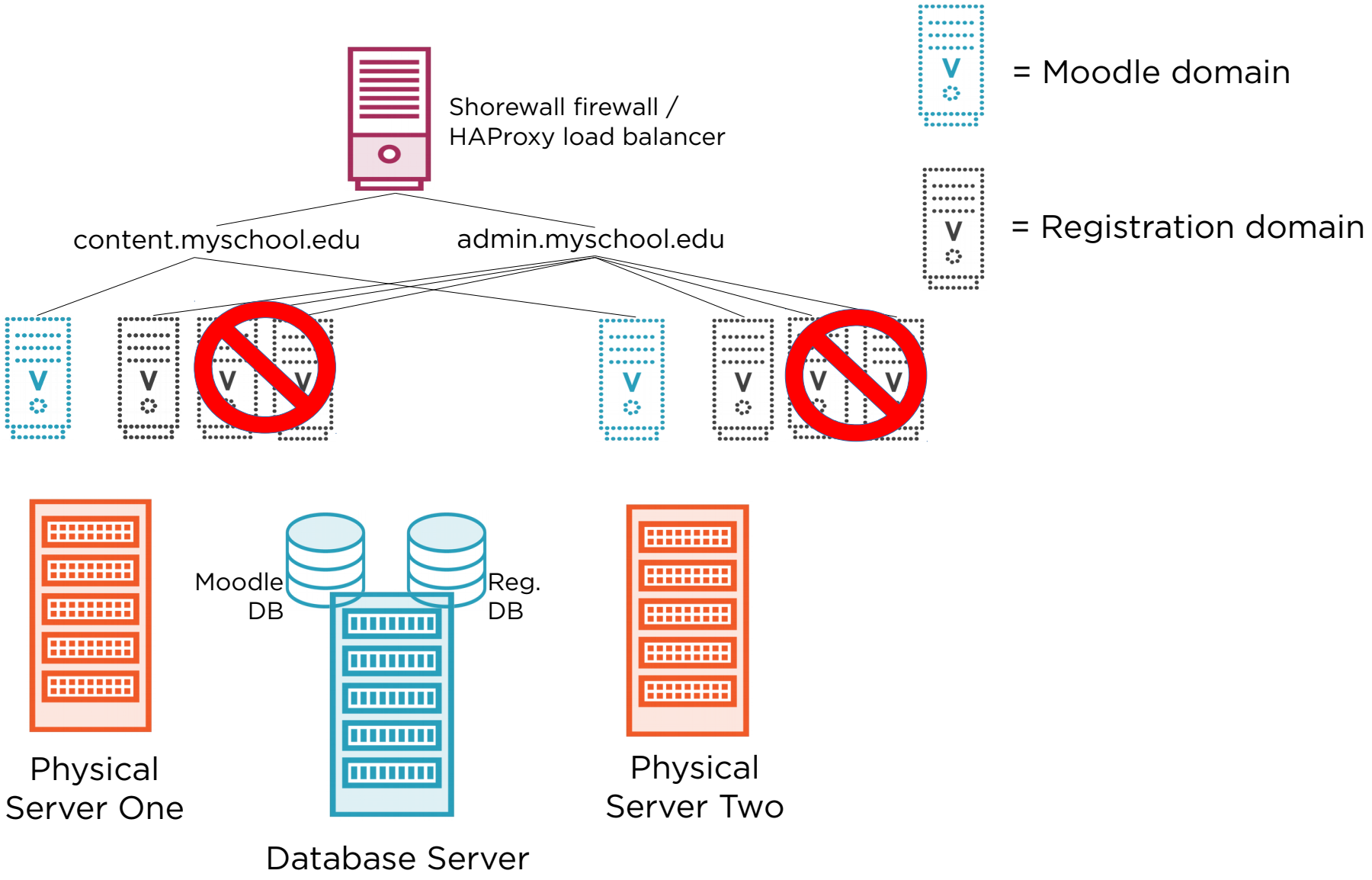
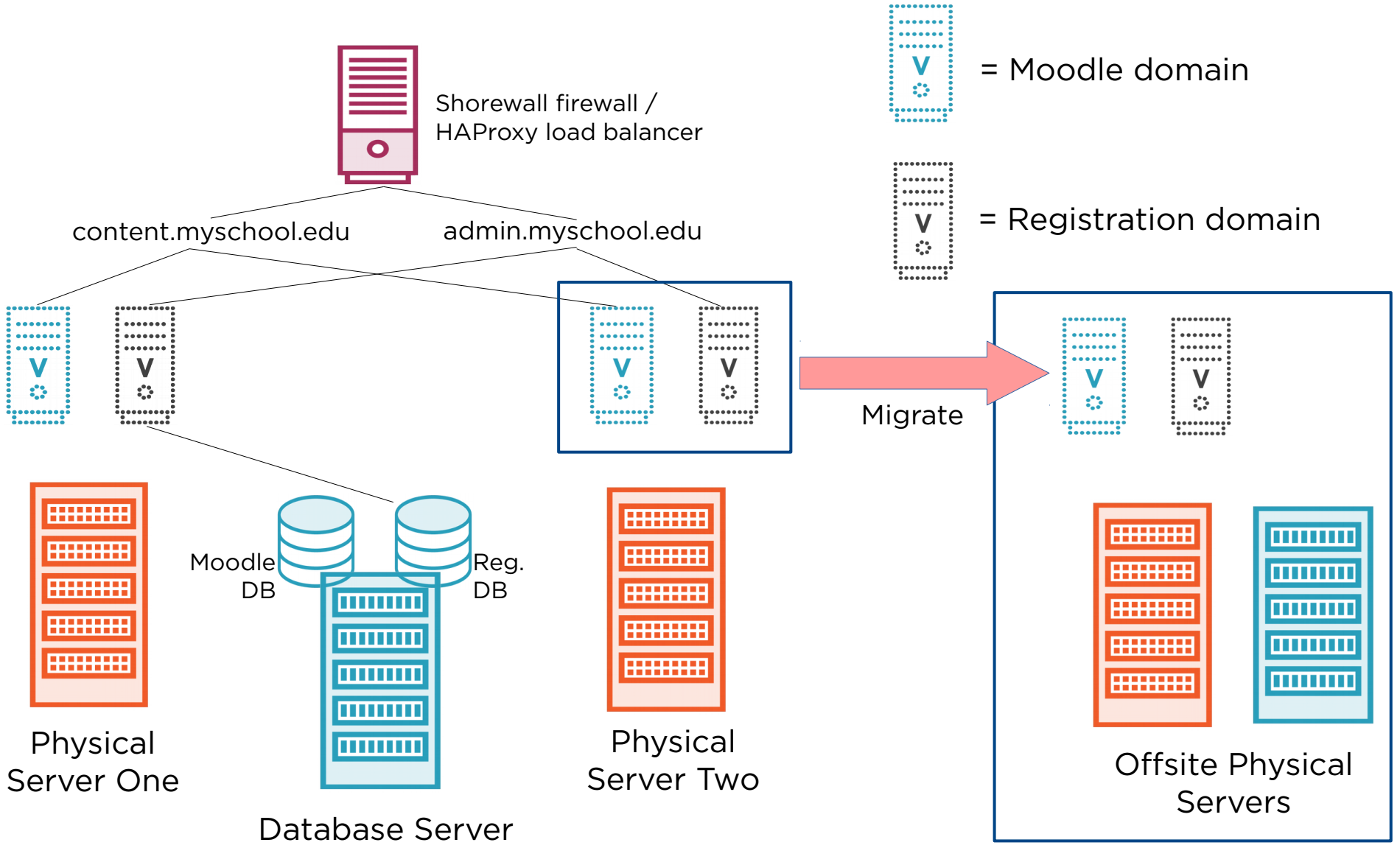


Offsite Replication



Linux Server Virtualization: Review

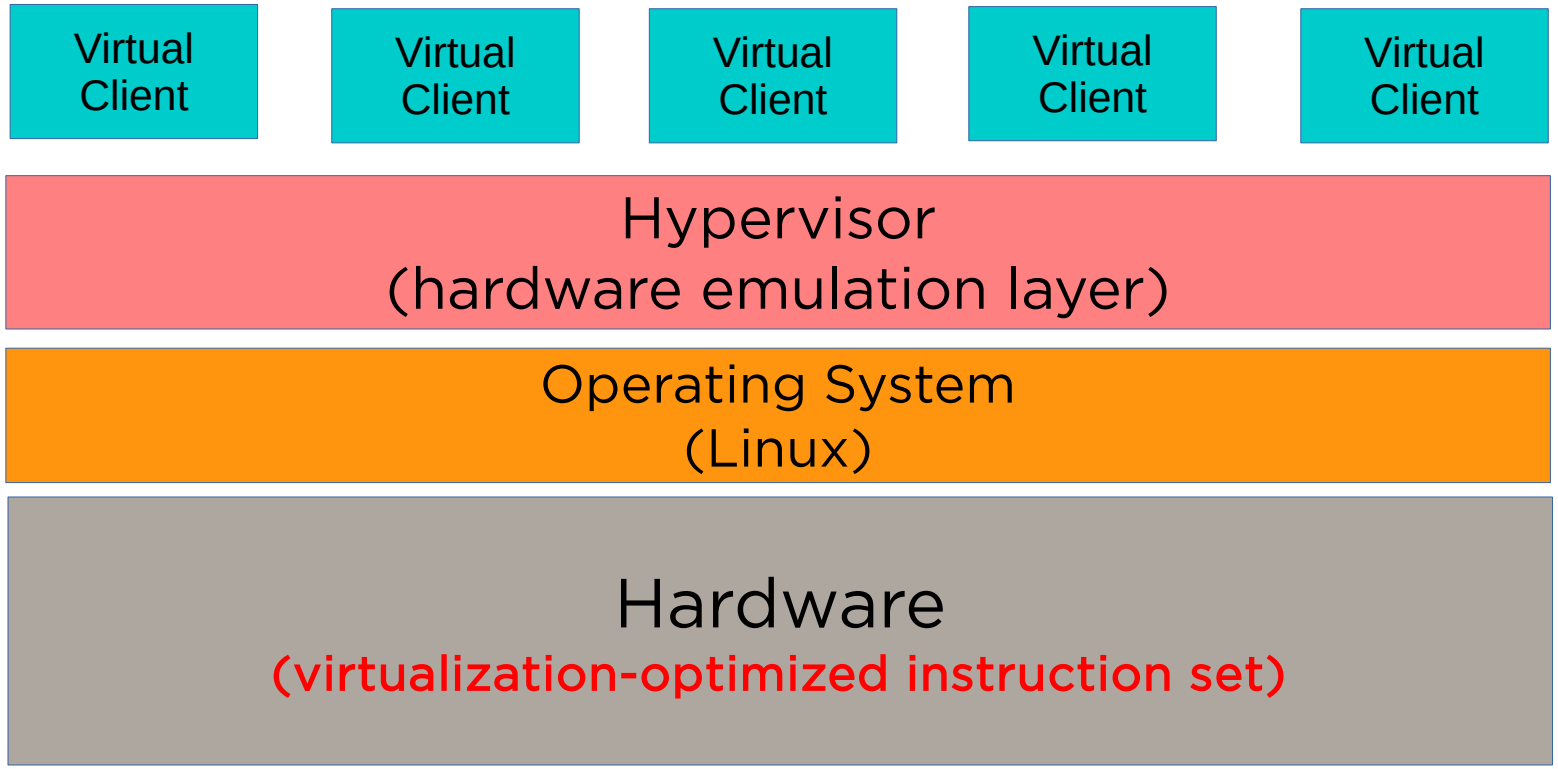
Design Considerations

- Fault isolation
- Performance isolation
- Consistency
- Server sprawl control

Hypervisor Categories:

- Type-1
  - "Bare-metal"
    - Xen
    - ESXi (vSphere)
- Type-2
  - System processes
    - VirtualBox
    - QEMU

Hardware Virtual Machines (HVM)



Cloud Compute Models

IaaS (Infrastructure as a Service)
- AWS EC2
- Azure Virtual Machines
- Google Compute Engine

PaaS (Platform as a Service)
- AWS Elastic Beanstalk
- Google App Engine
- Cloud Foundry
- Heroku

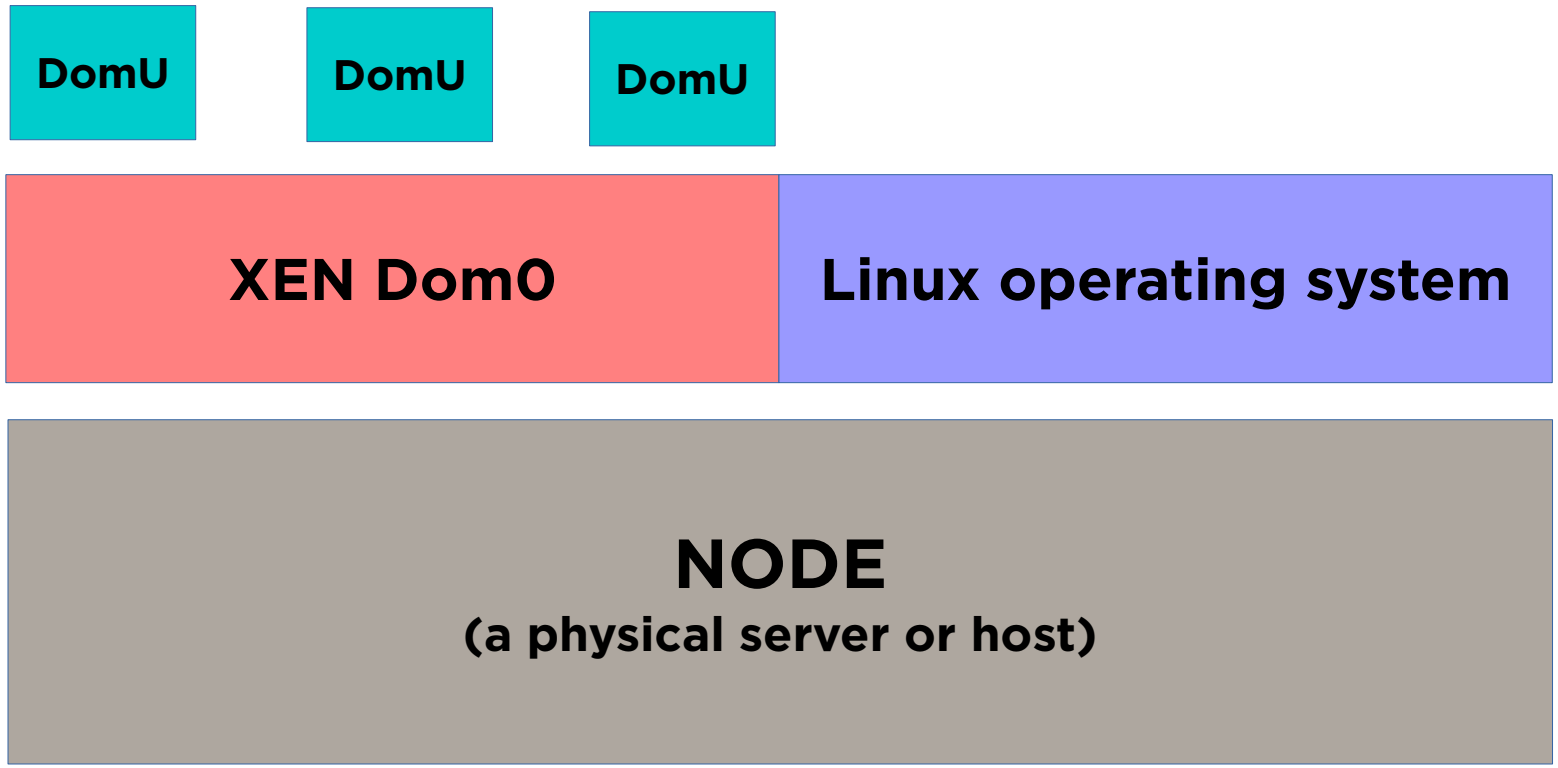
SaaS (Software as a Service)
- Google Apps
- Salesforce
- Dropbox
- WordPress.com

Sample XML Configuration File

Courtesy of:
http://libvirt.org/drvqemu.html

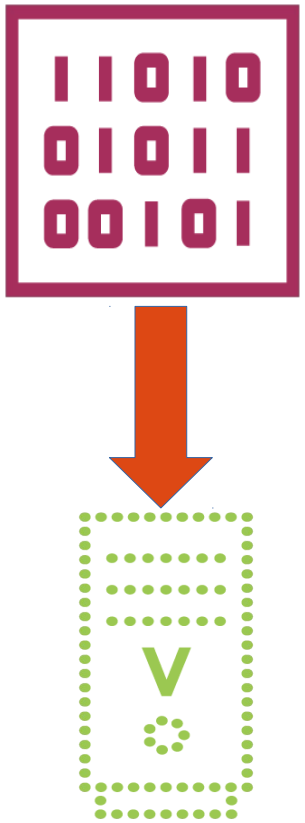
```
<domain type='qemu'>
  <name>QEmu-fedora-i686</name>
  <uuid>c7a5fdbd-cdaf-9455-926a-d65c16db1809</uuid>
  <memory>219200</memory>
  <currentMemory>219200</currentMemory>
  <vcpu>2</vcpu>
  <os>
    <type arch='i686' machine='pc'>hvm</type>
    <boot dev='cdrom'/>
  </os>
  <devices>
    <emulator>/usr/bin/qemu-system-x86_64</emulator>
    <disk type='file' device='cdrom'>
      <source file='/home/user/boot.iso'/>
      <target dev='hdc'/>
      <readonly/>
    </disk>
    <disk type='file' device='disk'>
      <source file='/home/user/fedora.img'/>
      <target dev='hda'/>
    </disk>
    <interface type='network'>
      <source network='default'/>
    </interface>
    <graphics type='vnc' port='-1'/>
```

XEN Architecture



The KVM Process

STEP ONE:
Create or modify image with qemu-img



STEP TWO:
Use image to start installation with qemu-kvm

NOTE: qemu-kvm = qemu-system-x86_64 and the kvm wrapper

KVM Managers

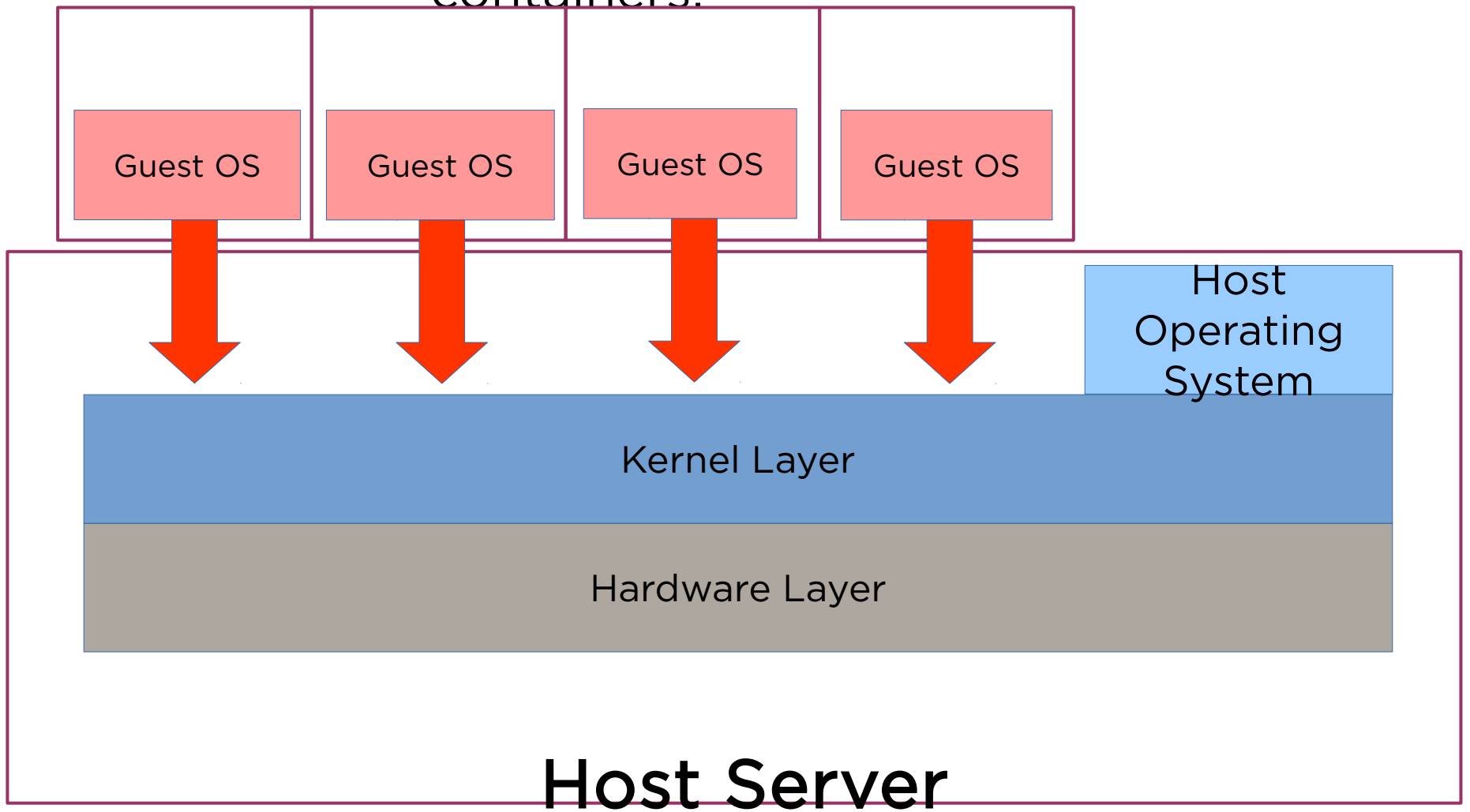
- libvirt (virsh)
- virt-manager
  - Non-GUI version; including virt-install
- vmbuilder
- KVM

Sample Pool Entry from KVM .XML Configuration

```
<pool type="netfs">
        <name>virtimages</name>
        <source>
          <host name="nfs.example.com"/>
          <dir path="/home/datauser/current-files"/>
          <format type='nfs'/>
        </source>
        <target>
          <path>/var/current-files</path>
        </target>
      </pool>
```

LXC Design

Fully isolated LXC containers:



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