Production-grade VMs Deployment

Using KVM/QEMU, Libvirt, Terraform, Ansible and Testinfra

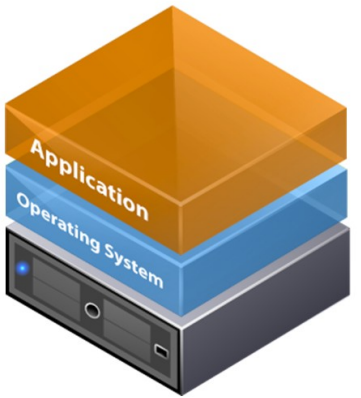
Aravinth Manivannan
realaravinth@batsense.net

Overview

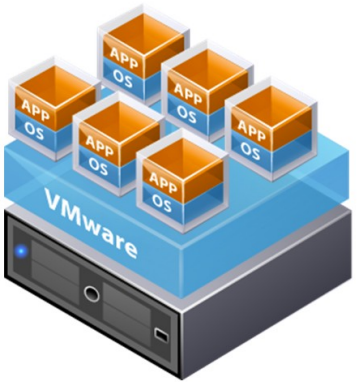
1) Why virtualization?
2) Deploy VMs with Terraform
3) Configure with Ansible
4) Test configuration with Testinfra
5) Increase and decrease scale quickly

Why virtualization?

1) Dependency isolation
2) Compute resource efficiency
3) Reduced operational costs
4) Reduce energy footprint
5) Reproducible environments



Traditional Architecture



Virtual Architecture

Dependencies

1) GNU/Linux host machine
2) KVM
3) QEMU
4) Libvirt
5) Terraform
6) Python 3
7) Ansible
8) Testinfra
9) Debian 11 Bullseye qcow2 bootable

Deploy VMs with terraform

Deploy load-balanced web application with Ansible

Test Deployment

Scale up and scale down web application

Resources

- Libvirt: https://libvirt.org
- Terraform: https://terraform.io
- Ansible: https://ansible.com
- Testinfra: https://testinfra.readthedocs.io/en/latest/
- Debian 11 “Bullseye” bootable: https://testinfra.readthedocs.io/en/latest/
- Source code: https://git.batsense.net/realaravinth/libreddit-loadbalance-demo
  https://github.com/mCaptcha