

## KVM-101 Linux KVM virtualization

**Course length:** 2 days

**Course description:** KVM is by far the most popular virtualization solution on Linux servers, used separately as a plain virtualization or as part of a cloud solution like Openstack.

Participants of this training will learn the main concepts of virtualization, KVM virtual hardware components, its installation and daily administration as well as some advanced topics like pools and volumes, bridge, snapshots, cloning guests, managing guest filesystems with libguestfs tools, migration, offline and live migration, v2v migration and performance considerations.

**Structure:** 50% theory 50% hands on lab exercises

**Target audience:** System administrators and Devops who want to understand and use KVM as a plain Linux virtualization solution or as part of an Openstack environments

**Prerequisites:** Linux system administration and networking knowledge

### Detailed Course Outline

#### 1. Virtualization basics

- **What is virtualization?**
- **Virtualization types:**
  - Hardware virtualization
  - Paravirtualization
  - OS virtualization (containers)
- **Hypervisors**
  - type 1
  - type 2
- **What is KVM?**

#### 2. KVM virtual hardware components

- **CPU**
  - vcpus, cpu pinning, cpuset
- **Memory**
  - memory allocation, max-mem, current-mem
  - ballooning
- **Storage**
  - storage pools
  - storage types
    - file based
    - lvm based
    - device based
- **Network**
  - network types
    - bridged
    - NAT-ed
    - private or isolated
- **Graphics**
  - graphic adapters
  - VNC
  - text console
- **Other devices**

- USB pass-through ◦ PCI pass-through

### 3. KVM installation

- **Pre-installation verification**
- **Package installation**
- **Post-installation tasks**

### 4. Administration tools

- **libvirt based tools**
- **virt-manager**
- **virt-install**

### 5. Administering KVM guests

- **Installing guest**
  - interactive installation
  - installation using kickstart
- **Managing guests**
  - start, stop, reset ... guests
  - configuration modification
  - removing guest

### 6. Advanced topics

- **pools and volumes**
- **bridge**
- **snapshots**
- **cloning guests**
- **managing guest filesystems with libguestfs tools**
- **migration**
  - offline and live migration
  - v2v migration
- **performance considerations**
  - CPU and memory over-commit
  - KSM
  - performance measurement