Glossari

Una breu llista de termes útils per entendre el servei proposat.

Terme	Descripció
Cloud computing	an approach to share resources based on virtualization techniques.
Virtualization	the capability of a system (i. e., a physical machine, also called *worker node* or *host*, as detailed later) to deliver to the users full access to part of its resources.
Resources – also physical resources	Namely: CPU(s), RAM memory, network access, and disk space.
Virtual machine	a set of physical resources instantiated, that is delivered, and available to the end user. It is often shorted as VM. In our offer, the owner of the VM (the user who created it) is granted full access by means of a full operating system (OS) runnning on top of the resources. The user is asked to configure and customize the desired OS, while the service administrator will also provide all the needed support. In a *service model* oriented classification this is known as *Infrastructure as a Service* (*IaaS*).
Virtual resources	the subset of resources assigned to a VM, as seen from inside the VM. It is common to talk about virtual CPU(s), virtual RAM, virtual disk(s) and virtual network interface(s) to refer to the share of CPU(s) power, RAM, disk space, and network access assigned to a VM.
Quota	The amount of physical resources made available to a user or to a group to deploy one or more VMs. The concept of quota is related to how much of the total physical resources provided by CSUC a user or a group can use.
Guest	another way to refer to a VM. It stands for *guest operating system* since it runs on top of the operating system of the machine sharing the physical resources.
Worker node	a physical machine sharing its physical resources to one or more VM. The worker node *hosts* one or more *guests* (or *virtual machines*).
Host	an alternative term for a *worker node*.
Hypervisor	the software layer used to deliver and manage the virtualized resources, from the administrator's point of view. Our offer is based on the *Kernel-based Virtual Machine* (*KVM*) hypervisor.
Cloud middleware	a software layer intefacing in a friendly way the user to the hypervisor. In our view, this component performs the *remote virtualization*. We talk about *virtualization* since the user is capable of creating VMs and it is *remote* since the user accomplishes this task over the Internet, sitting in his/her location while the worker nodes are located at the LRZ. The cloud middleware we chose is *OpenNebula*.
Frontend	
Disk format	the structure of a disk image file. The *only* supported formats are:
raw	a plain binary file, obtained simply dumping the content of a disk. CDROM ISO images fall into this category.
qcow2	a more recent format, implementing features such as compression and copy-on-write (growing the image size on the fly till hitting the maximum assigned at creation time).
Disk image	a file that is mounted by a VM as a disk or a CDROM. These are the available types:
OS	it contains the operating system, the kernel, the bootloader and all the files to start the operating system of the VM.
DATABLOCK	it is the equivalent of a spare data disk, attached on the fly to save files and data.

CDROM	it is the equivalent of an external CDROM (so, read-only), used especially for the installation of a guest OS on a DATABLOCK
Volatile disk	swap or storage space attached to a VM, deployed directly on the worker node, without the possibility to take a disk snapshot.
Disk Snapshot	a copy of a disk image available for later use. It is available in two variants:
Hot snapshot	the disk image is dumped right away. The consistency of the disk is *not* guaranteed (i.e., a filesystem check could be needed after attaching the disk to the VM and before mounting it inside the guest OS). It is suitable for data partitions.
Deferred snapshot	the disk image is dumped at the *end* of the VM's lifetime (i.e., when it is *shutdown* via the ONE web interface; the "shut down" command from inside the guest OS is *not* enough). If the shutdown process is carried out correctly by the VM, then the disk image is consistent, that is, no filesystem check is required. For this reason, it is suitable for disk images used to boot the VMs.
VM Snapshot	it records the status and the content of a VM's memory and the VM's disk(s). It does *not* produce a new image and its lifetime ends with the VM itself. It *only* works if *all* disk images attached to the VM are in qcow2 format.
Datastore	a component of the cloud middleware, it is a container for the disk images and the disk snapshots. There are two types:
Image datastore	it contains the disk images and the disk snapshots. It can be accessed directly by the users.
System datastore	it contains the volatile disks and the copy of the image disks of the running VMs. It is the workspace of the worker nodes and it is not directly accessible.
Template	it can be seen as the container holding together all the items (images, number of CPUs, memory allocation, virtual networks, ...) defining a VM.
virtio	a virtualization standard for disk and network interfaces. It is a *guest* feature, so it has to be supported by the operating system of the VM (e.g., Linux kernel greater or equal to 2.6.25). Usually the hypervisor emulates the disk interface (IDE or SCSI) and the network card (RTL8139), adding an additional overhead. The *virtio* is native, so the *guest* interfaces directly to the *host*.
State	It is the stage of a VM's life cycle. The most relevant of these steps are:
Pending	the cloud middleware is looking for free and suitable resources.
Prolog	the cloud middleware is copying the disk images from the image datastore to the system datastore.
Booting	the hypervisor is deploying the VM.
Running	the VM is alive and available to the user(s).
Hotplug	a disk or a network card is being attached/detached.
Suspend	result of a Suspend operation: VM not available, all disks saved, content of the RAM saved to disk, CPUs on the worker node not freed (keeping on charging for the usage).
Power off	result of a Power off operation: VM not available, all disks saved, content of the RAM not dumped, CPUs on the worker node not freed (keeping on charging for the usage).
Stop	result of a Stop operation: VM not available, all disks saved, content of the RAM saved to disk, CPUs on the worker node freed.
Undeploy	result of a Undeploy operation: VM not available, all disks saved, content of the RAM not dumped, CPUs on the worker node freed.
Save	one or more disks being dumped or copied (i.e., snapshot).
Epilog	clean up of the worker node after the decommission of the VM.
Fail	irreversible error
Unknown	the cloud middleware can not monitor the VM.