Ex No: 4 **Live migration of VMs with XEN Server and XEN Center**

21/07/26

Aim:

To perform live migration using XEN Server and XEN Center.

Theory:

In **full virtualization**, the virtual machine doesn't know it's being virtualized. The hypervisor copies all the hardware, so you can install any OS without changing it.
Example: VMware, VirtualBox

In **paravirtualization**, the virtual machine knows it is being virtualized and talks directly to the hypervisor. This gives better speed but needs a modified OS.
Example: Xen in PV mode

Live migration is the process of moving a running virtual machine from one physical host to another without shutting it down. It allows maintenance, load balancing, or fault tolerance without interrupting services.

- Requires shared storage and proper network configuration.
- Used in enterprise environments for high availability.

CentOS (Community ENTerprise Operating System) is a **Linux distribution** based on Red Hat Enterprise Linux (RHEL). It is commonly used as a **guest OS** in virtualized environments due to its stability and wide support.

Citrix is a software company that provides virtualization and cloud computing solutions. It develops **Citrix Hypervisor (formerly XenServer)**, a commercial distribution of the open-source Xen Project hypervisor.

- Offers tools like **XenCenter** for managing virtual environments
- Used in virtual desktop infrastructure (VDI), server virtualization, and cloud hosting

XenServer is a virtualization platform by **Citrix** that uses the **Xen Type-1 hypervisor** to run multiple virtual machines on a single physical server. It allows efficient VM management, live migration, and resource allocation using **XenCenter**.

XenServer uses the Xen Hypervisor, which is a **Type-1 (bare-metal) hypervisor**.It runs directly on hardware, providing better performance and security than Type-2 hypervisors.

Purpose of XenServer:

- To **host, manage, and run virtual machines** efficiently on physical hardware.
- Offers **live migration**, resource management, and VM isolation.
- Ideal for **enterprise virtualization**, test labs, and cloud computing platforms.

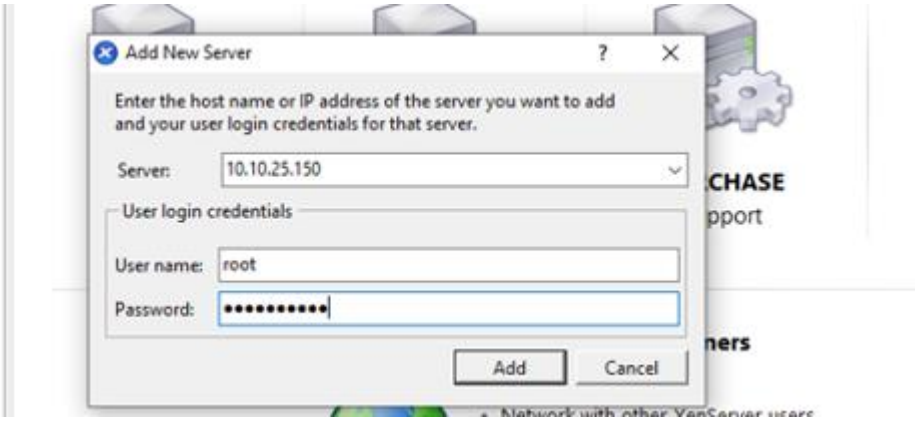
Tools similar to XenServer:

- **VMware ESXi (Elastic Sky X Integrated)**
  – Type-1 hypervisor widely used in enterprises for stable and secure virtualization.
- **Microsoft Hyper-V (Hypervisor Virtualization)**
  – Type-1 hypervisor built into Windows Server; ideal for managing VMs in Windows environments.
- **KVM (Kernel-based Virtual Machine)**
  – Type-1 Linux hypervisor that uses the Linux kernel for running virtual machines.
- **Proxmox VE (Virtual Environment)**
  – Type-1 open-source virtualization platform that combines KVM and LXC containers with a web-based interface.
- **RHV (Red Hat Virtualization)**
  – Type-1 enterprise virtualization platform based on KVM, designed for managing Linux-based virtual environments.
- **Oracle VM VirtualBox**
  – Type-2 hypervisor ideal for desktop use and testing environments; supports various guest OSes.

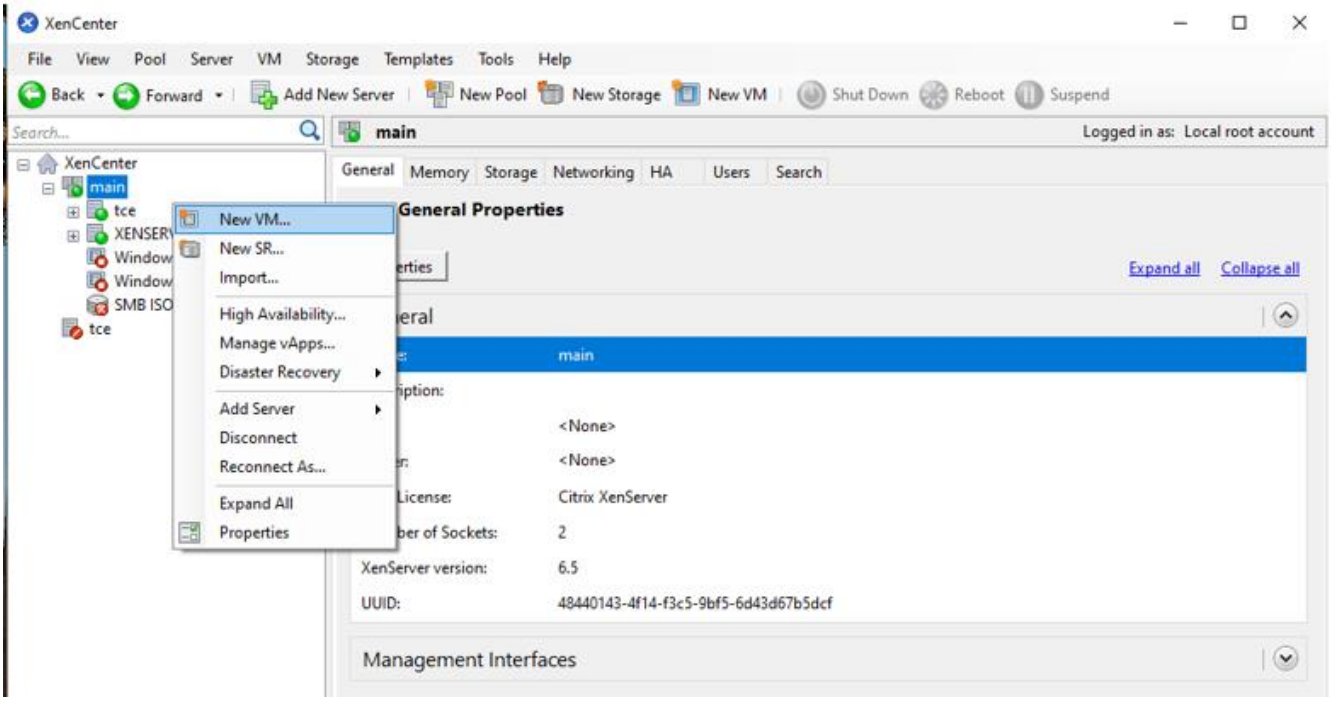
Procedure:

1. Download XEN Center application.
2. Click on add new server option.

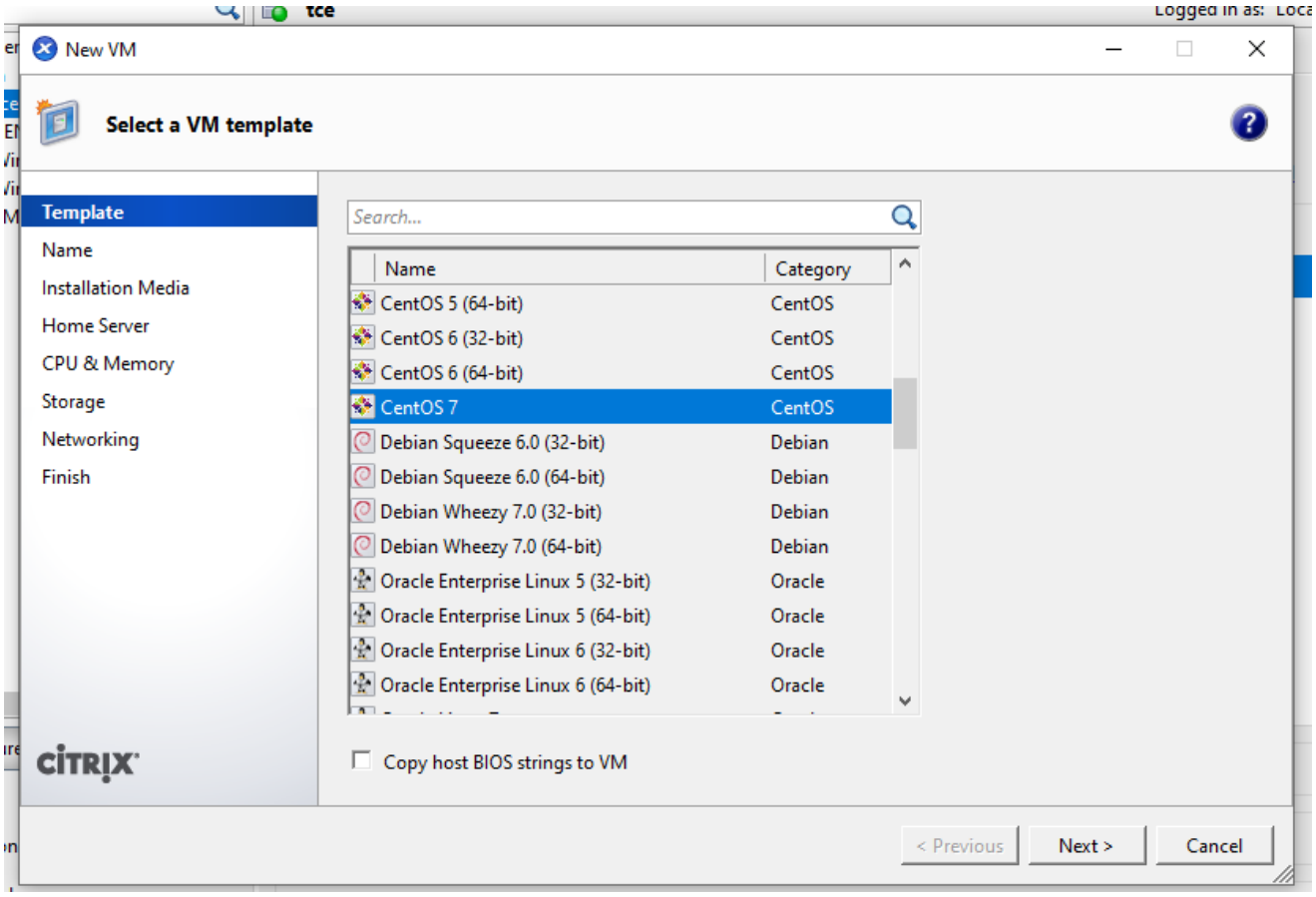
3. A dialog box to add a new server will appear.
4. Type in the IP address as *10.10.25.150* and the username is *root* and password are *Tceit@1234*



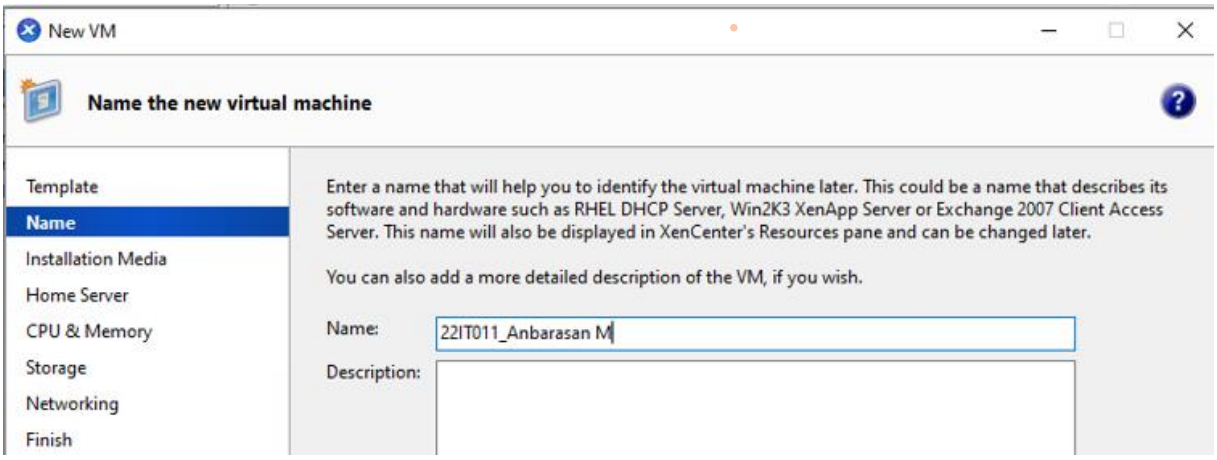
5. Click add.
6. The server will be connected.
7. Right click on the server created *(tce)* and select new VM.

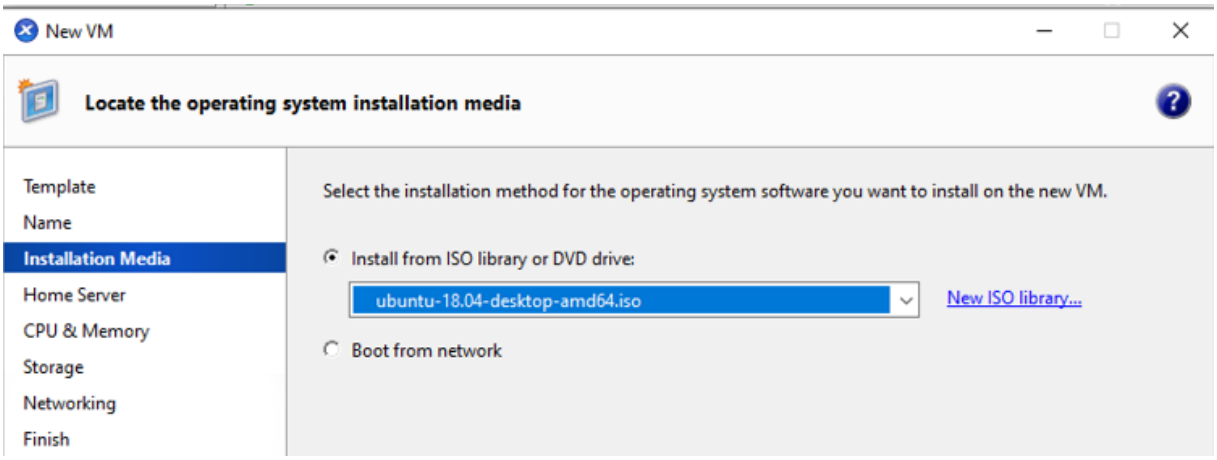


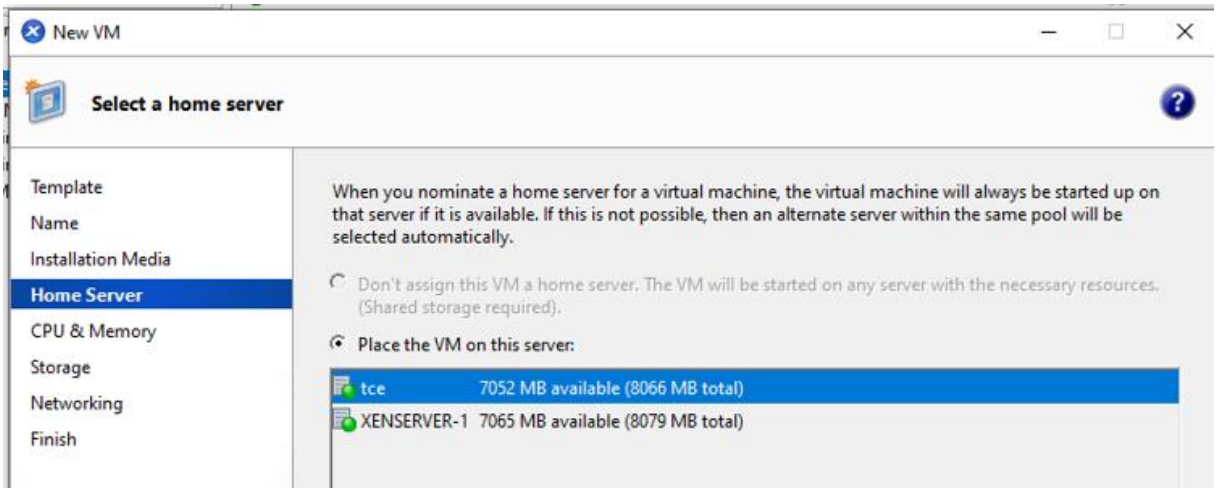
8. Select the VM template and click next.

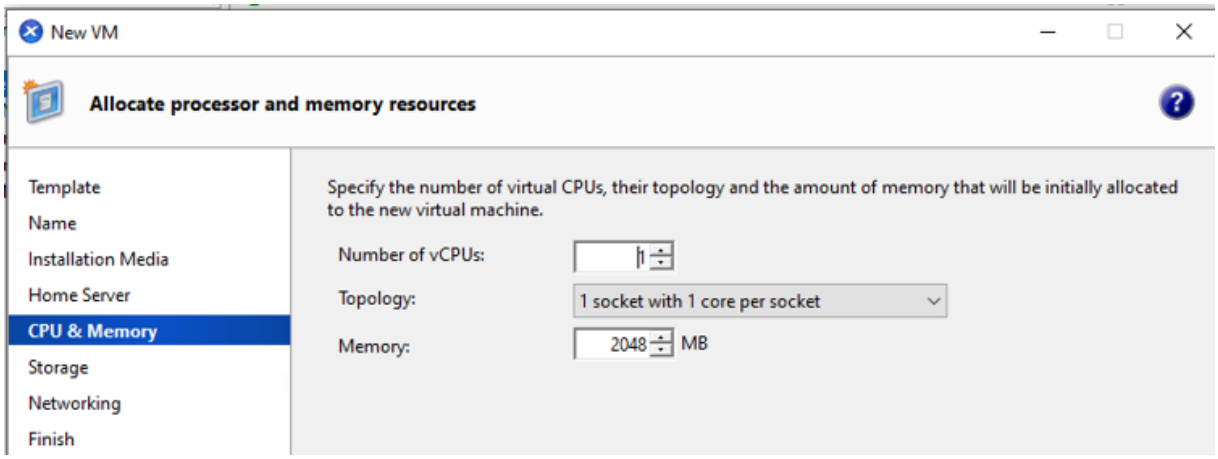


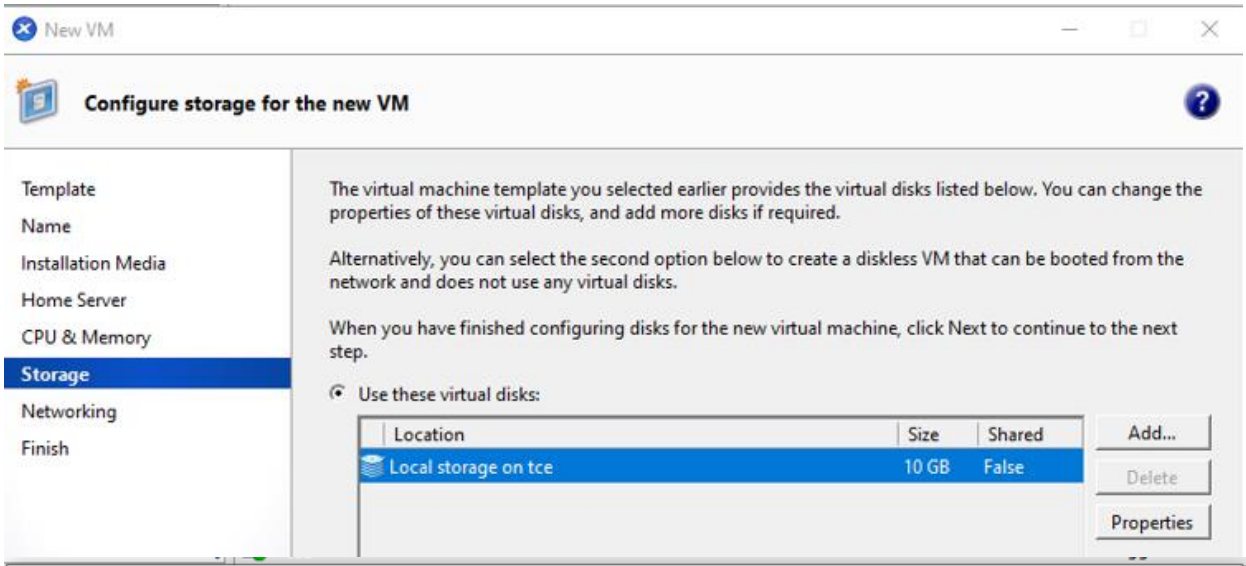
9. Name the virtual machine and add description, select the iso image file of ubuntu, set home server, allocate CPU & memory, allocate storage, set networking and finally click *Create Now.*

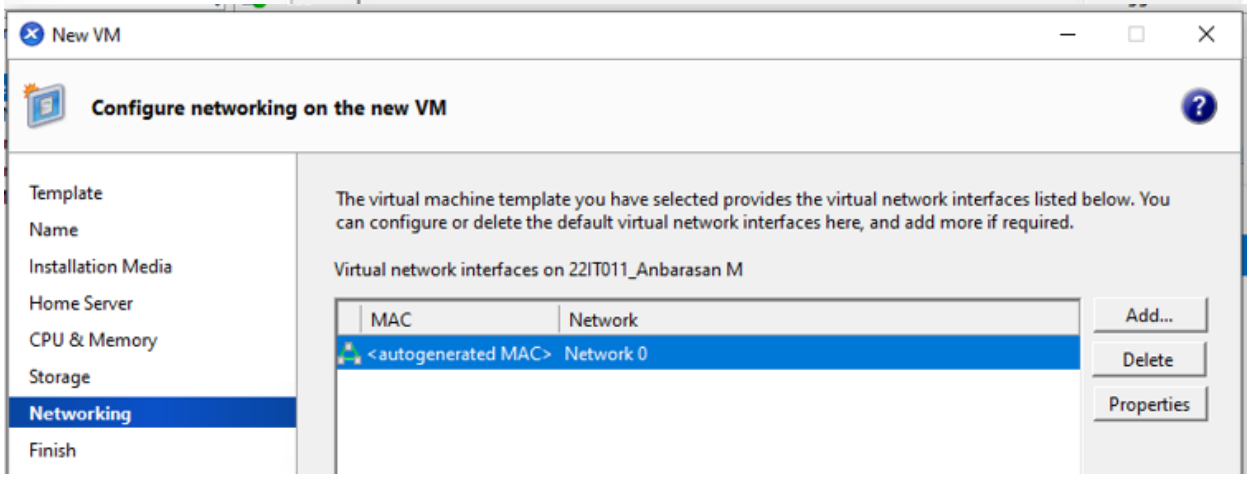


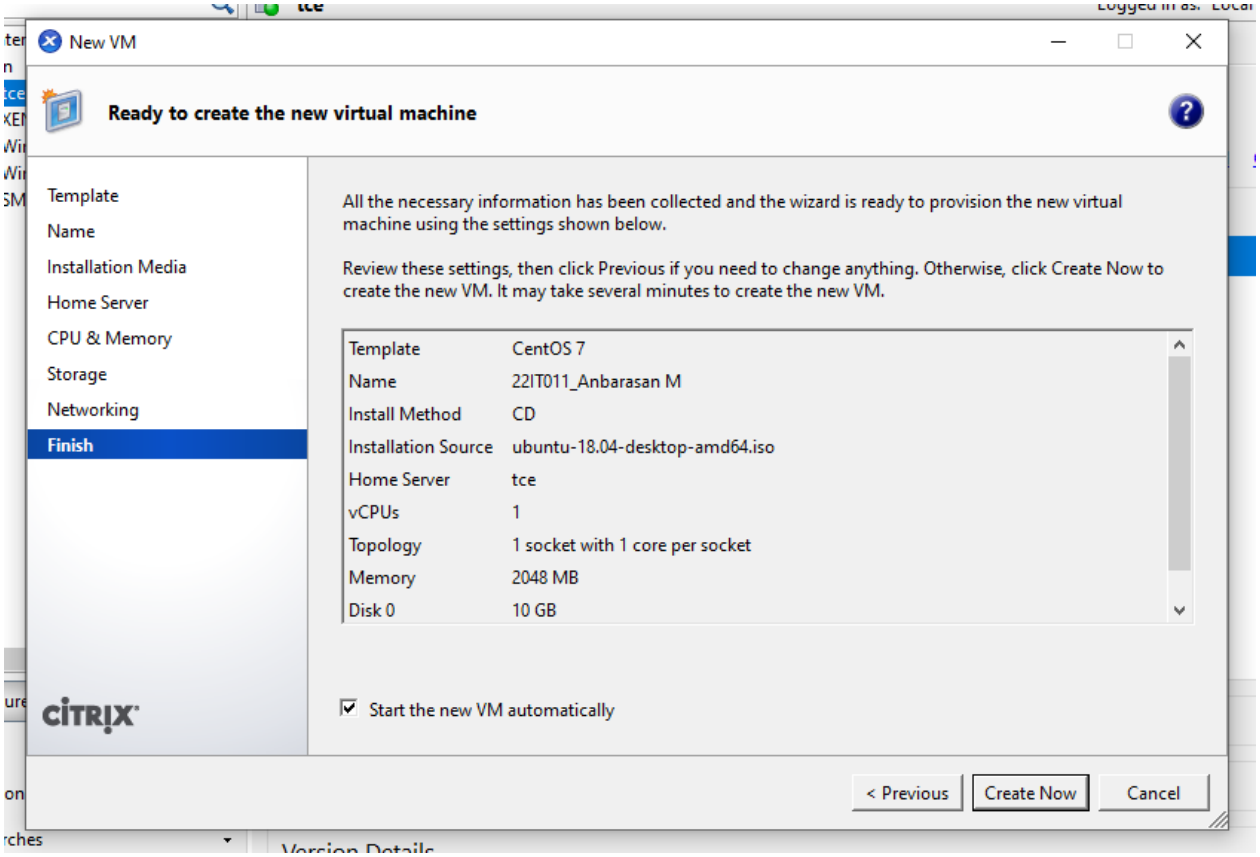




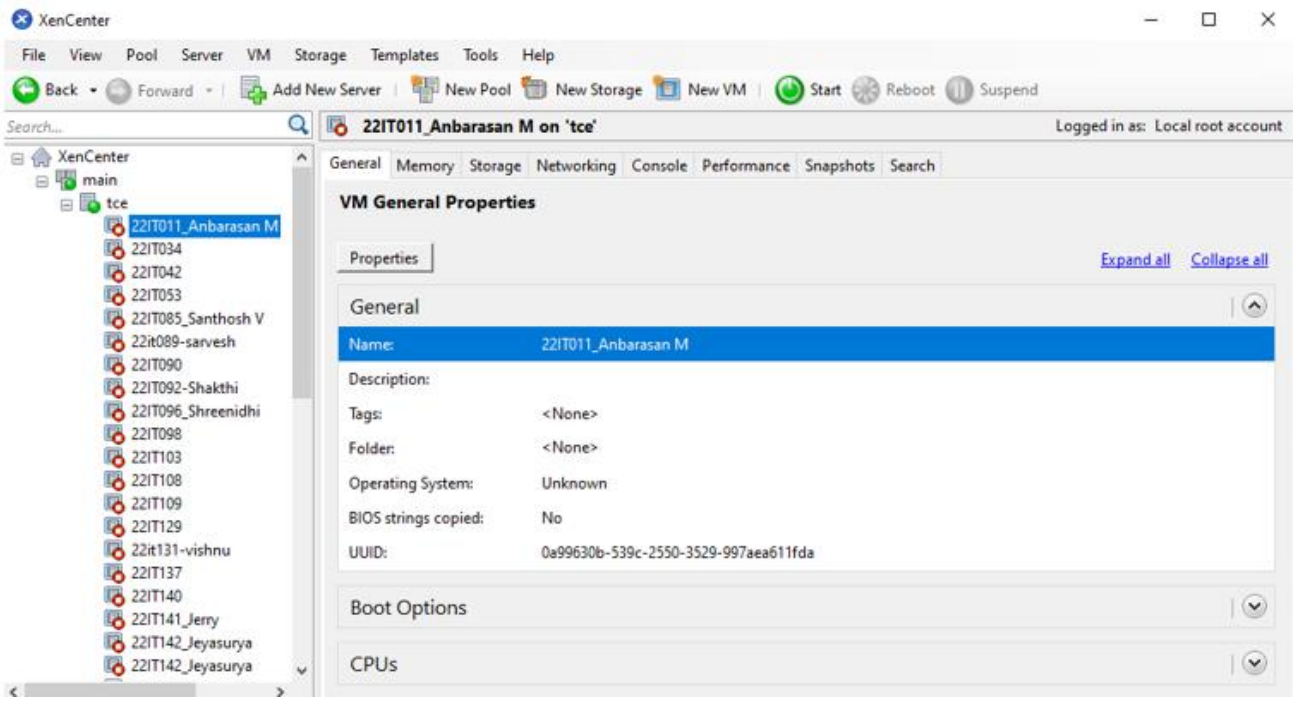



New VM
Configure storage for the new VM
Template
Name
Installation Media
Home Server
CPU & Memory
Storage
Networking
Finish
The virtual machine template you selected earlier provides the virtual disks listed below. You can change the properties of these virtual disks, and add more disks if required.
Alternatively, you can select the second option below to create a diskless VM that can be booted from the network and does not use any virtual disks.
When you have finished configuring disks for the new virtual machine, click Next to continue to the next step.
Use these virtual disks:
Location
Size
Shared
Local storage on tce
10 GB
False
Add...
Delete
Properties

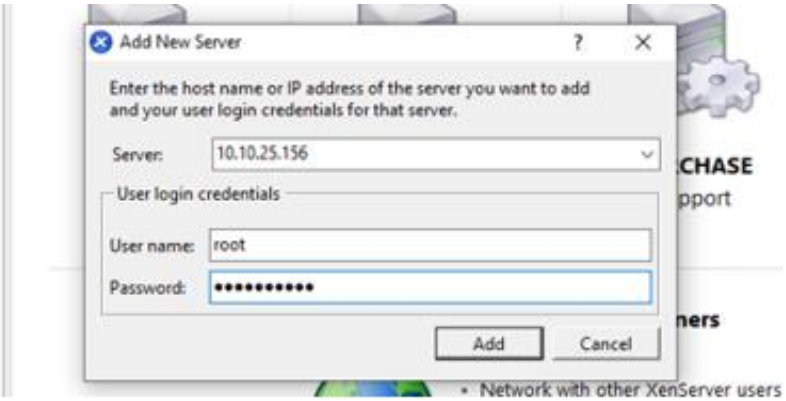

New VM
Configure networking on the new VM
Template
Name
Installation Media
Home Server
CPU & Memory
Storage
Networking
Finish
The virtual machine template you have selected provides the virtual network interfaces listed below. You can configure or delete the default virtual network interfaces here, and add more if required.
Virtual network interfaces on 22IT011_Anbarasan M
MAC
Network
<autogenerated MAC>
Network 0
Add...
Delete
Properties


New VM
Ready to create the new virtual machine
Template
Name
Installation Media
Home Server
CPU & Memory
Storage
Networking
Finish
All the necessary information has been collected and the wizard is ready to provision the new virtual machine using the settings shown below.
Review these settings, then click Previous if you need to change anything. Otherwise, click Create Now to create the new VM. It may take several minutes to create the new VM.
Template CentOS 7
Name 22IT011_Anbarasan M
Install Method CD
Installation Source ubuntu-18.04-desktop-amd64.iso
Home Server tce
vCPUs 1
Topology 1 socket with 1 core per socket
Memory 2048 MB
Disk 0 10 GB
CITRIX
Start the new VM automatically
< Previous
Create Now
Cancel

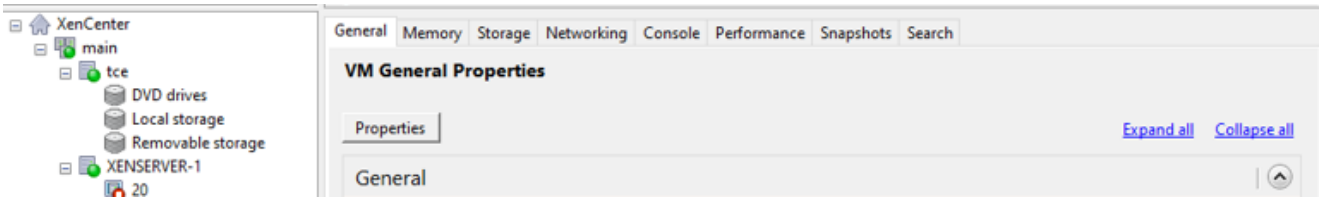
10. Then, your VM will created successfully on the server(*tce*).



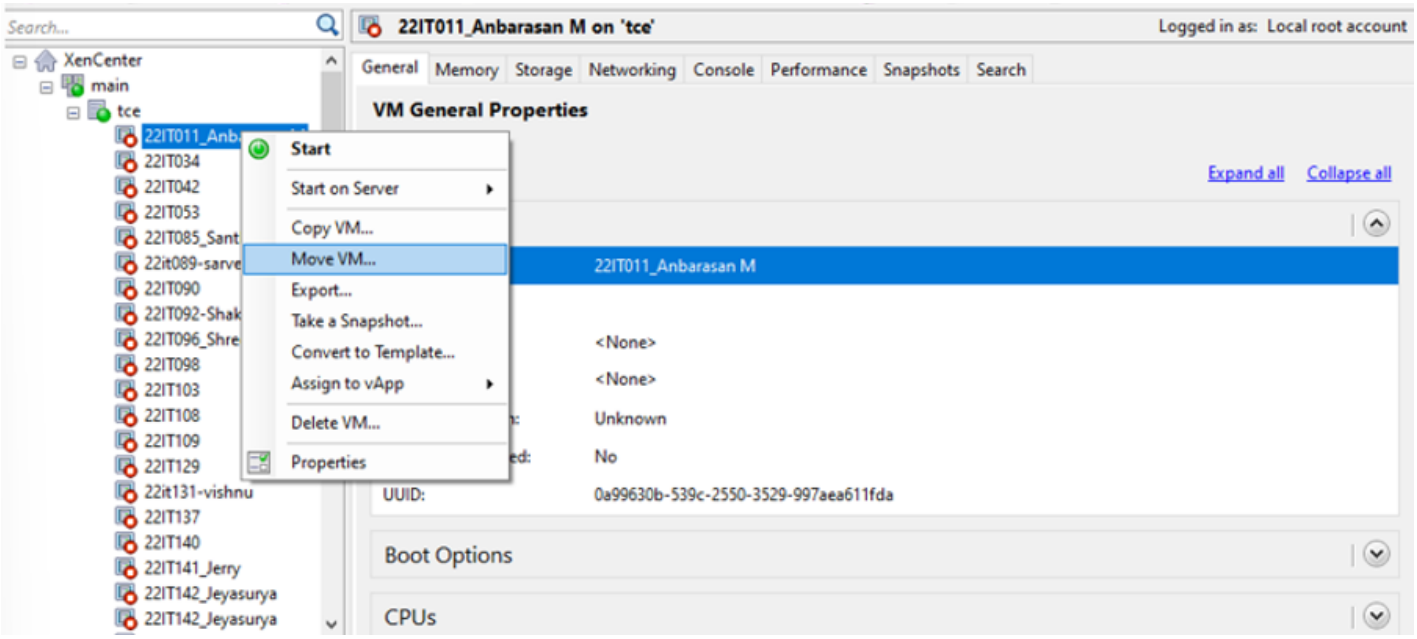
11. After loading the VM, click on add new server.
12. Add the IP address as *10.10.25.156* and the username is *root* and password is *Tceit@1234*



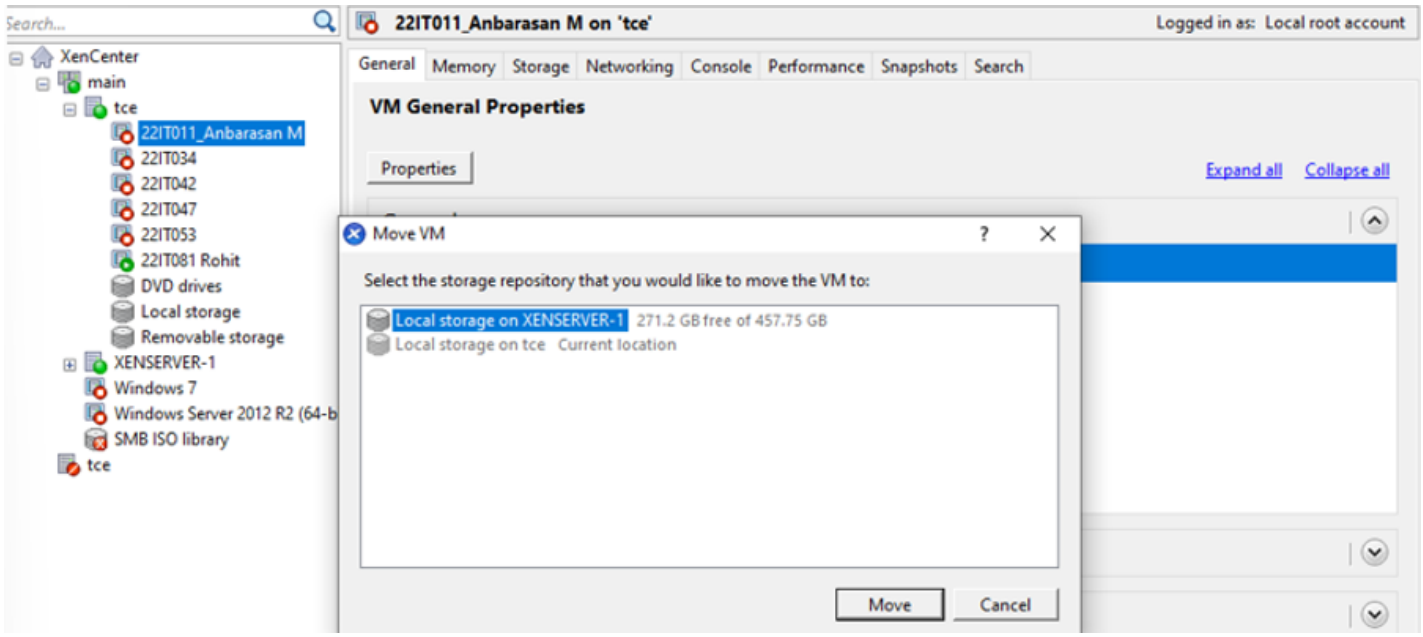
13. The server 2(*XENSERVER-1*) will be connected and started.



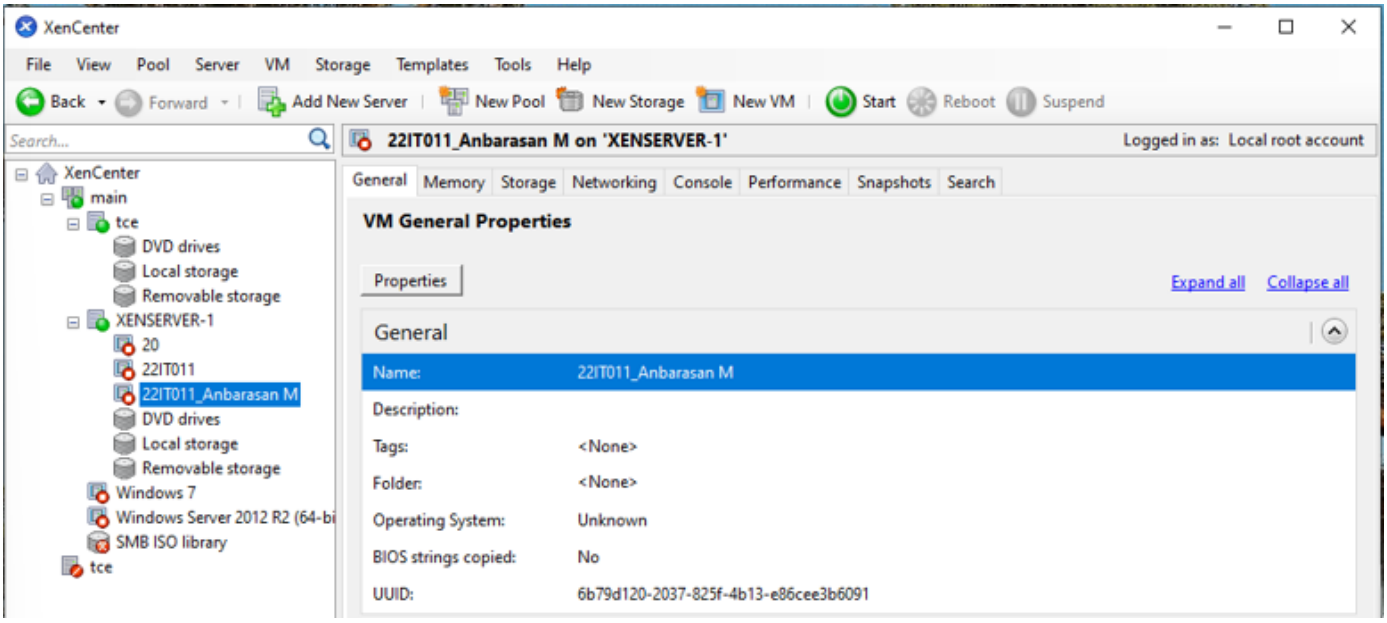
14. Select the VM created in *tce* and right click and select move VM.

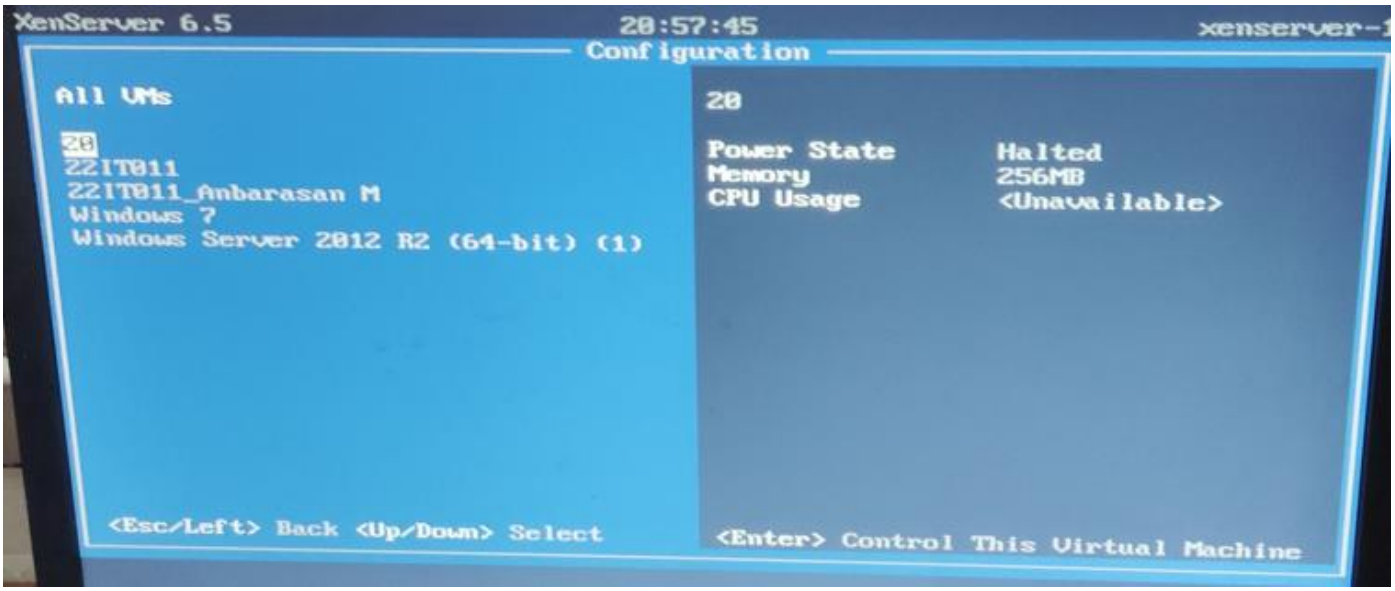


15. Select *XENSERVER-1* from the drop-down list and click *Move*.



16. The VM from *tce* will be then migrated to *XENSERVER-1*.





Result:

Thus, the live migration of VM using XEN Server and XEN Center was implemented successfully.