Experiment No.: 01

Title: Virtualization using VMware workstation and XEN Server-Client installation

Batch: B–1 **Roll No.: 16010422234** **Experiment No.: 01**

Aim: Virtualization using VMware workstation and XEN Server-Client installation

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Resources needed: VMWare Setup, XEN installation set up

Pre–Requisite: Understanding of Installation of Operating System

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Theory:

Concept of Virtualization

Virtualization addresses IT's most pressing challenge: the infrastructure sprawl that compels IT departments to channel 70 percent of their budget into maintenance, leaving scant resources for business-building innovation.

The difficulty stems from the architecture of today's X86 computers: they're designed to run just one operating system and application at a time. As a result, even small data centers have to deploy many servers, each operating at just five percent to 15 percent of capacity—highly inefficient by any standard.

Virtualization software solves the problem by enabling several operating systems and applications to run on one physical server or "host". Each self-contained "virtual machine" is isolated from the others, and uses as much of the host's computing resources as it requires.

Advantages of virtualization

- Run multiple operating systems on one server. For example, instead of having development-server and QA-server, you can run both development and QA on a single server.
- You can have multiple flavours of OS on one server. For example, you can run 2 Linux OS, 1 Windows OS on a single server.
- Multiple OS running on the server shares the hardware resources among them. For example, CPU, RAM, network devices are shared among development-servers and QA-servers running on the same hardware.
- Allocate hardware resources to different applications based on the utilization. For example, if you have 8GB of RAM on the server, you can assign less RAM to one virtual machine (2GB to development-server) and more RAM (6GB to QA-server) to another virtual machine that is running on that server.
- High availability and business continuity. If VMware is implemented properly, you can migrate a virtual machine from one server to another server quickly without any downtime.
- This reduces the operational cost and power consumption. For example, instead of buying and running two servers, you will be using only one server and run both development and QA on it.

VMware

VMware is a virtualization and cloud computing software provider for x86-compatible computers. VMware Inc. is a subsidiary of EMC Corporation and has its headquarters in Palo Alto, California. VMware Workstation makes it possible to partition a single physical server into multiple virtual machines. VMware workstation works with Windows, Solaris, Linux and Netware, any or all of which can be used concurrently on the same hardware.

Xen

Xen is a Virtual Machine Monitor (VMM) also known as a hypervisor; this is a software system that allows the execution of multiple virtual guest operating systems simultaneously on a single physical machine. Xen is known as a Type 1 or "bare-metal" hypervisor, meaning that it runs directly on top of the physical machine as opposed to within an operating system. Guest virtual machines running on Xen are known as "domains" and a special domain known as dom0 is responsible for controlling the hypervisor and starting other guest operating systems. These other guest operating systems are called domUs, this is because these domains are "unprivileged" in the sense they cannot control Xen or start/stop other domains.

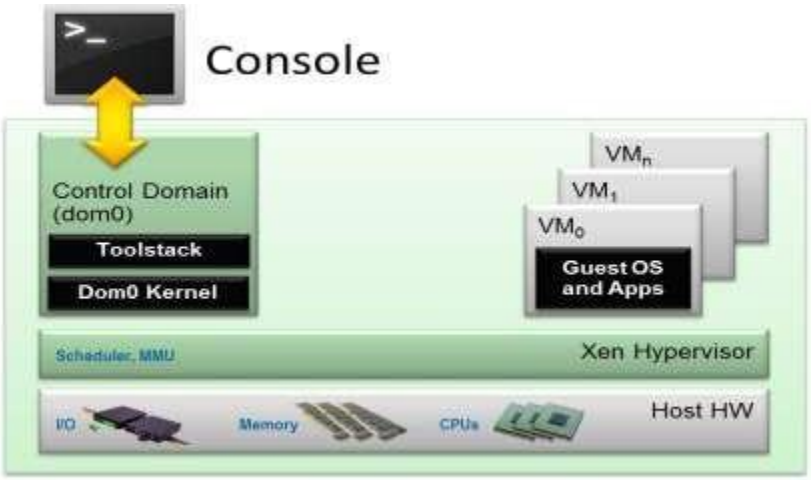
Xen supports 2 primary types of virtualization, para-virtualization and hardware virtual machine (HVM) also known as "full virtualization". Para-virtualization uses modified guest operating systems that we refer to as enlightened guests. These operating systems are aware that they are being virtualized and as such don't require virtual "hardware" devices, instead they make special calls to Xen that allow them to access CPUs, storage and network resources.

In contrast HVM guests need not be modified as Xen will create a fully virtual set of hardware devices for this machine that resemble a physical x86 computer. This emulation requires much more overhead than the paravirtualization approach but allows unmodified guest operating systems like Microsoft Windows to run on top of Xen. HVM support requires special CPU extensions - VT-x for Intel processors and AMD-V for AMD based machines. This technology is now prevalent and all recent servers and desktop systems should be equipped with them.

XEN Architecture

The Xen hypervisor runs directly on the hardware and is responsible for handling CPU, Memory, and interrupts. It is the first program running after exiting the bootloader. On top of Xen we can run a number of virtual machines. A running instance of a virtual machine in Xen is called a domain or guest. A special domain, called domain 0 contains the drivers for all the devices in the system. Stack to manage virtual machine creation, destruction, and configuration.

- **Guest Domains/Virtual Machines** are virtualized environments, each running their own operating system and applications. Xen supports two different virtualization modes: Paravirtualization (PV) and Hardware-assisted or Full Virtualization (HVM). Both guest types can be used at the same time on a single Xen system. It is also possible to use techniques used for Paravirtualization in an HVM guest: essentially creating a continuum between PV and HVM. This approach is called PV on HVM. Xen guests are totally isolated from the hardware: in other words, they have no privilege to access hardware or I/O functionality. Thus, they are also called unprivileged domain (or DomU).



XEN Architecture

- **The Control Domain (or Domain 0)** is a specialized Virtual Machine that has special privileges like the capability to access the hardware directly, handles all access to the system's I/O functions and interacts with the other Virtual Machines. It also exposes a control interface to the outside world, through which the system is controlled. The Xen hypervisor is not usable without Domain 0, which is the first VM started by the system.

- **Toolstack and Console**: Domain 0 contains a control stack (also called Toolstack) that allows a user to manage virtual machine creation, destruction, and configuration. The toolstack exposes an interface that is either driven by a command line console, by a graphical interface or by a cloud orchestration stack such as OpenStack or CloudStack.

- **Xen-enabled operating systems**: A Xen Domain 0 requires a Xen-enabled kernel. Paravirtualized guests require a PV-enabled kernel. Linux distributions that are based on recent Linux kernels are Xen-enabled and usually contain packages that contain the Xen Hypervisor and Tools Xen (the default Toolstack and Console). All but legacy Linux kernels are PV-enable

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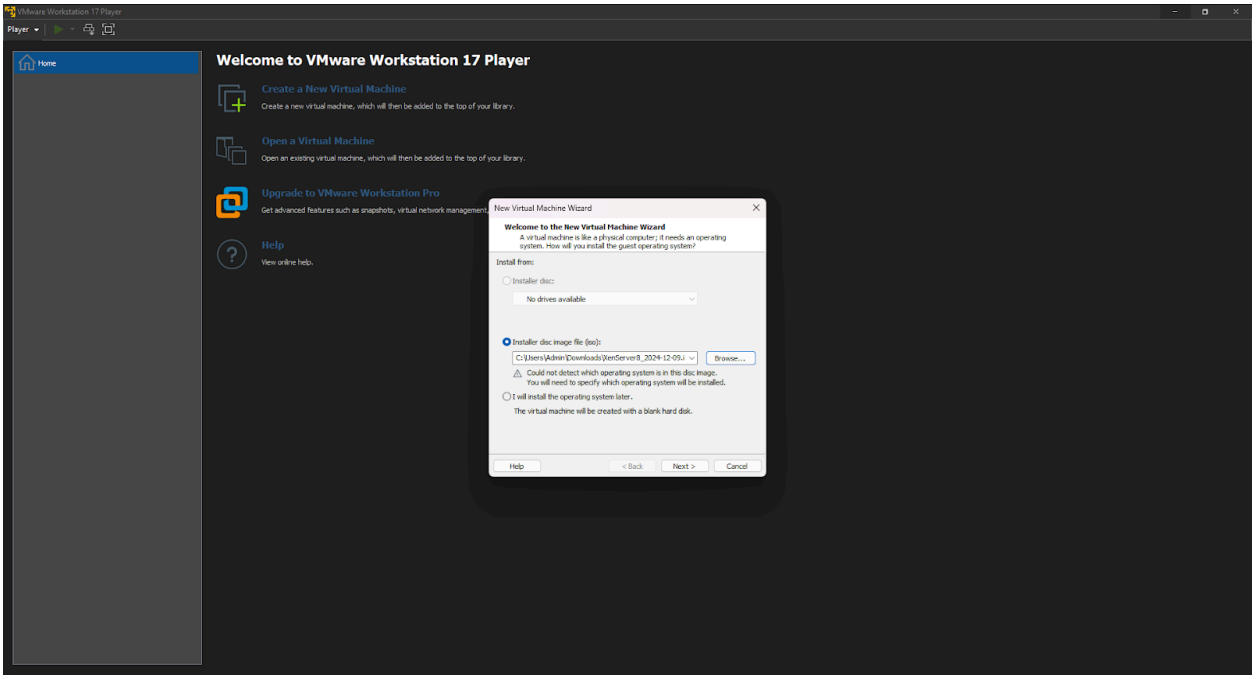
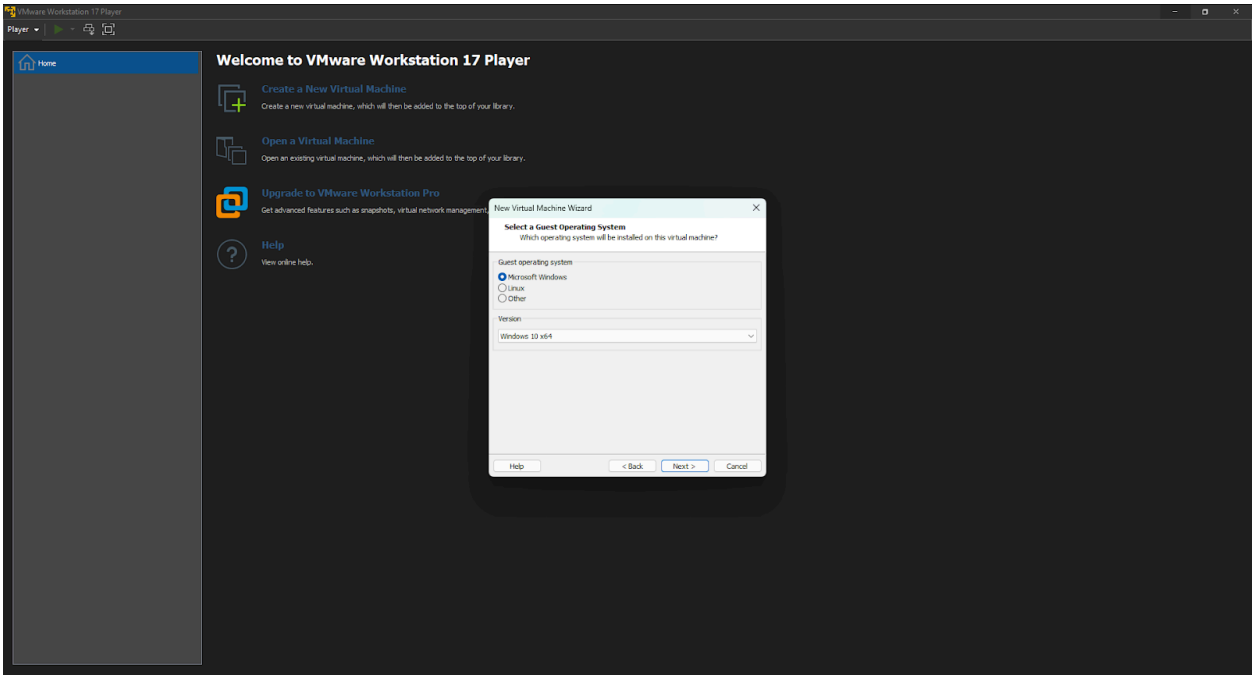
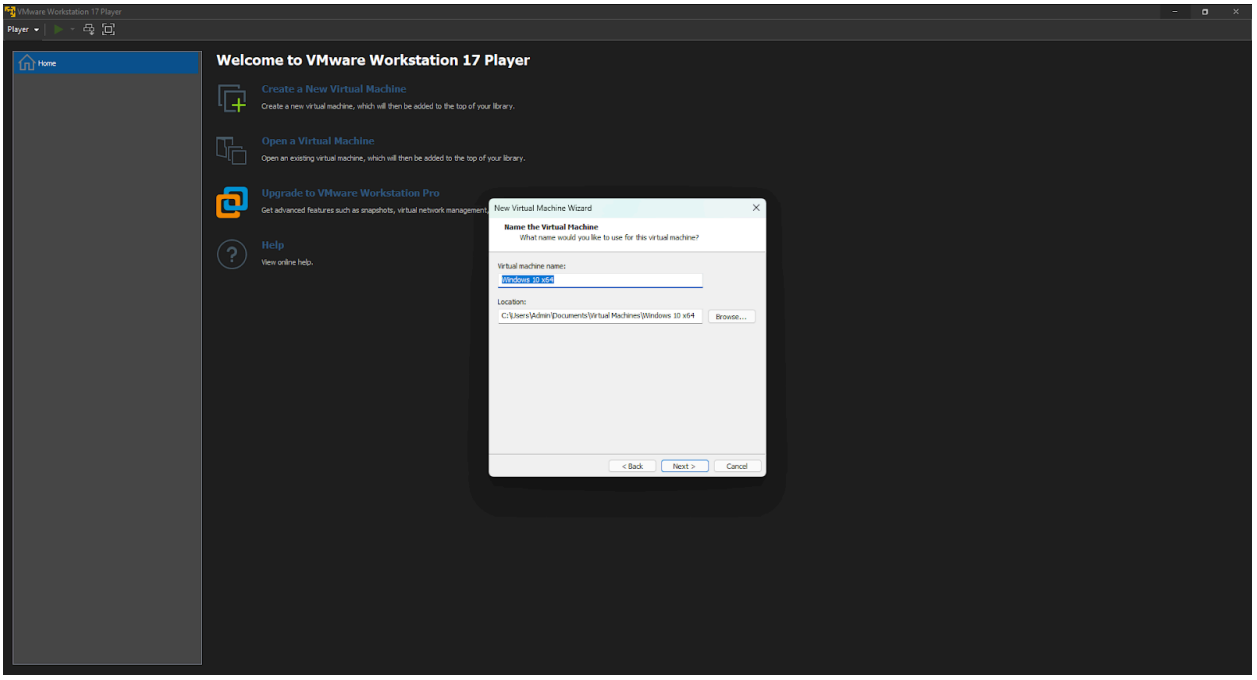
Procedure:

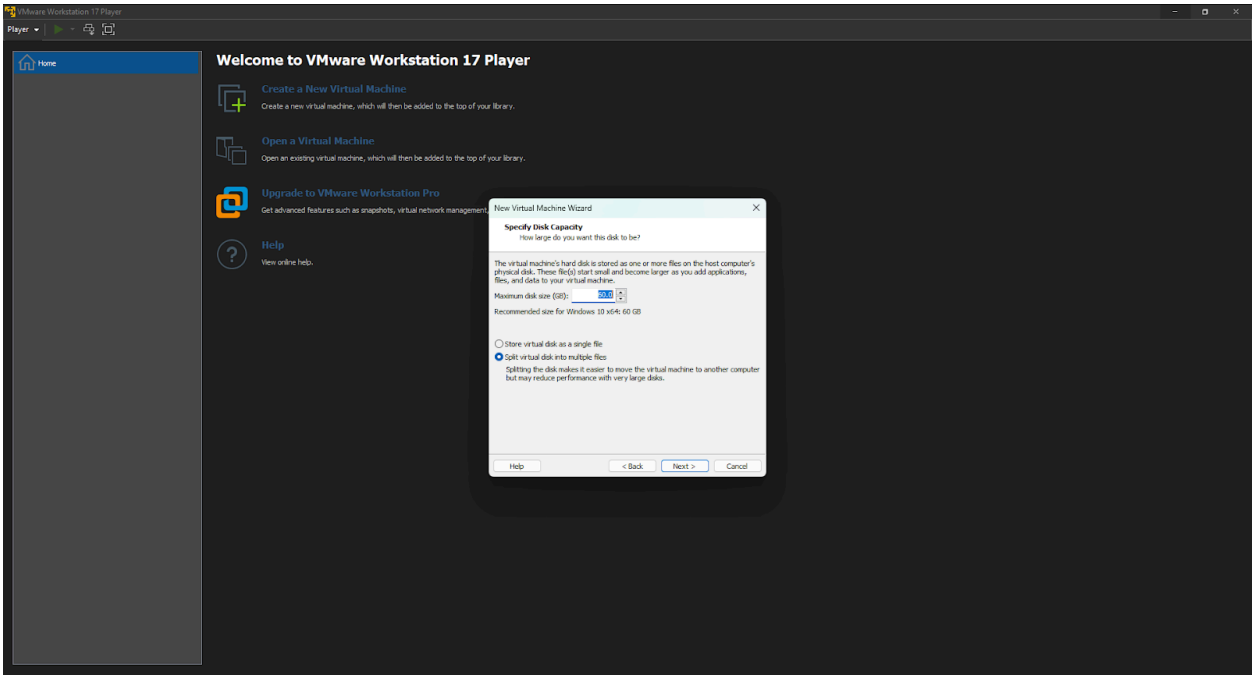
1) Download the setup file of VMWare workstation from https://www.vmware.com/in/download/open_source.html
2) Install VMware Server using VMware Installation Wizard
3) Download ISO file Xen server 6.2 and Xen Center from https://www.citrix.com/downloads/citrix-hypervisor/product-software/xenserver-70-standard-edition.html
   http://downloadns.citrix.com.edgesuite.net/11653/XenServer-7.0.0-install-cd.iso
4) Add a Xen server as a VM in VM workstation.
5) Add Xen Center as a VM in VM workstation.
6) Connect Xen server in Xen Center

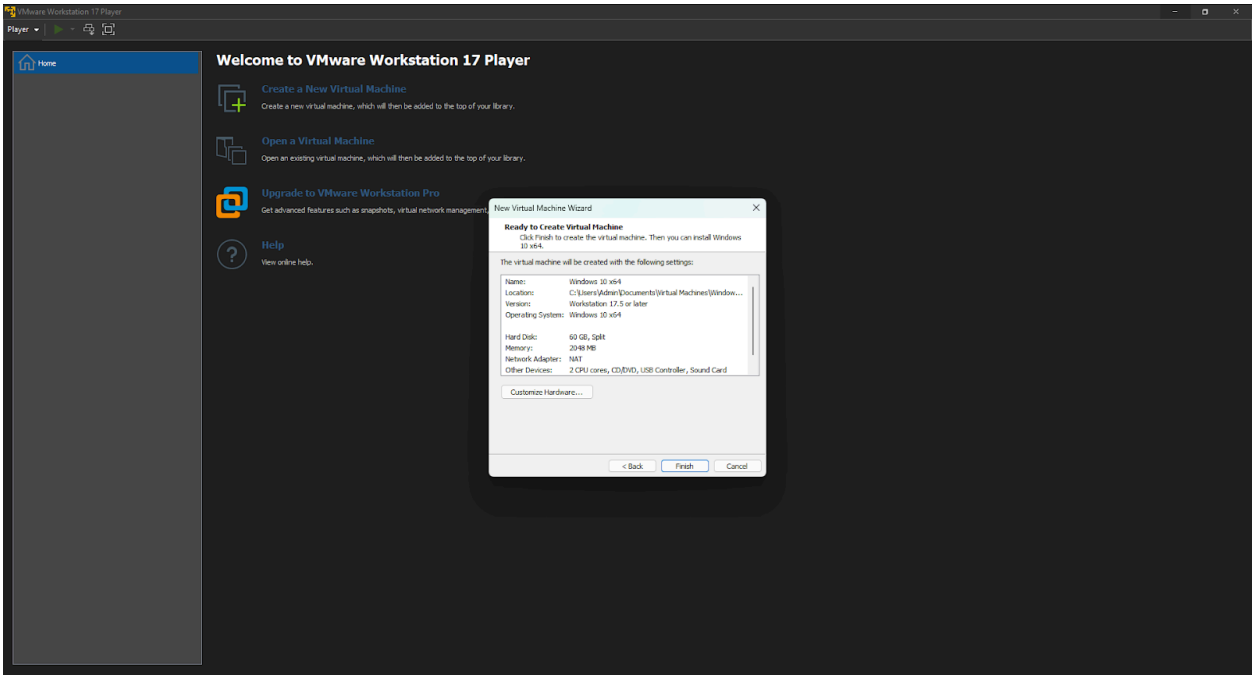
Results: (Steps with screenshots)
Prepare a document with all Steps with screenshots

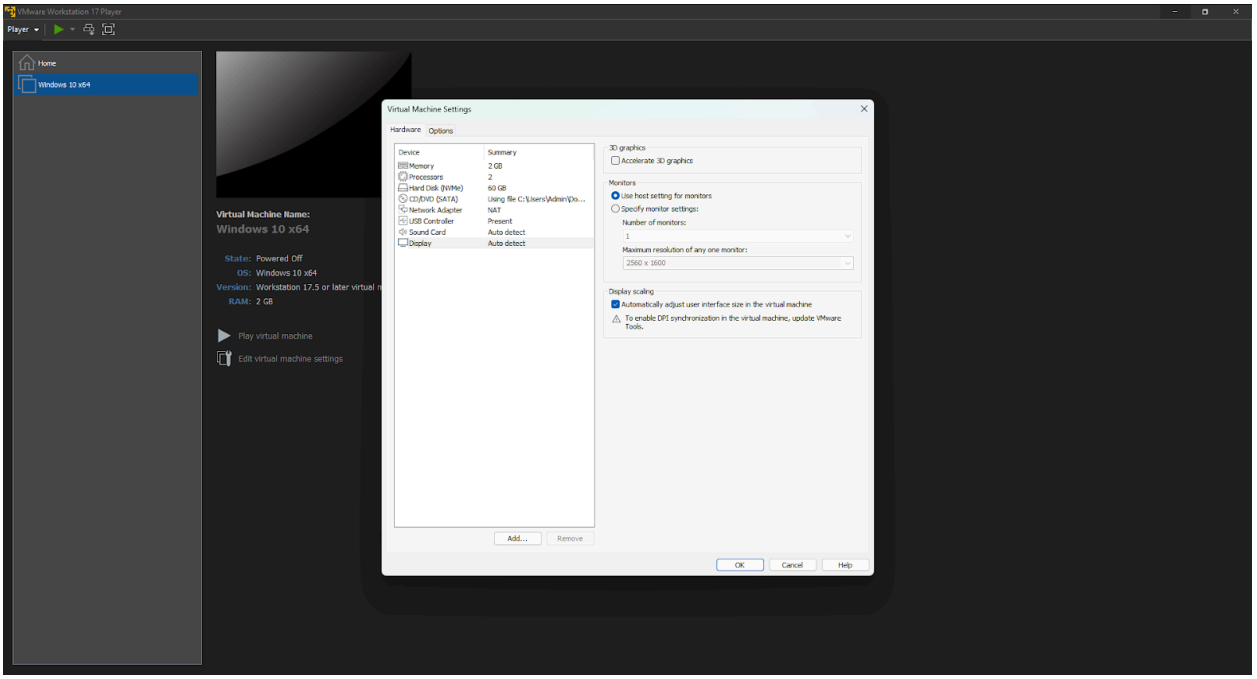


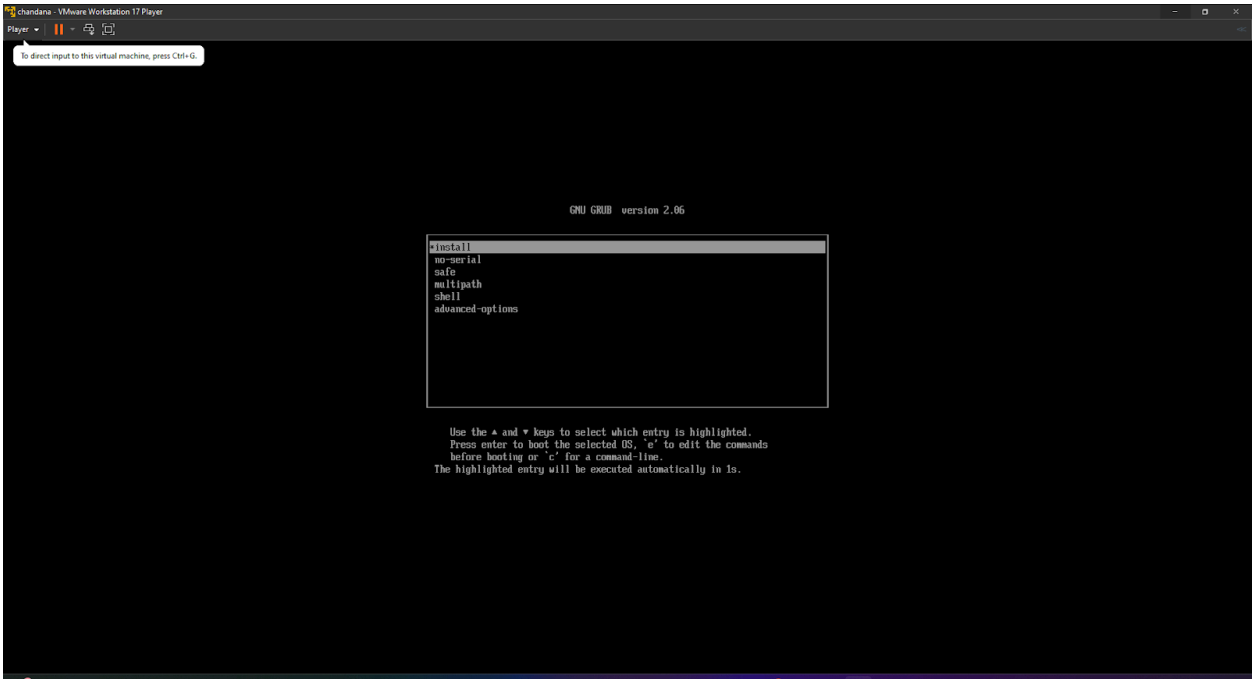


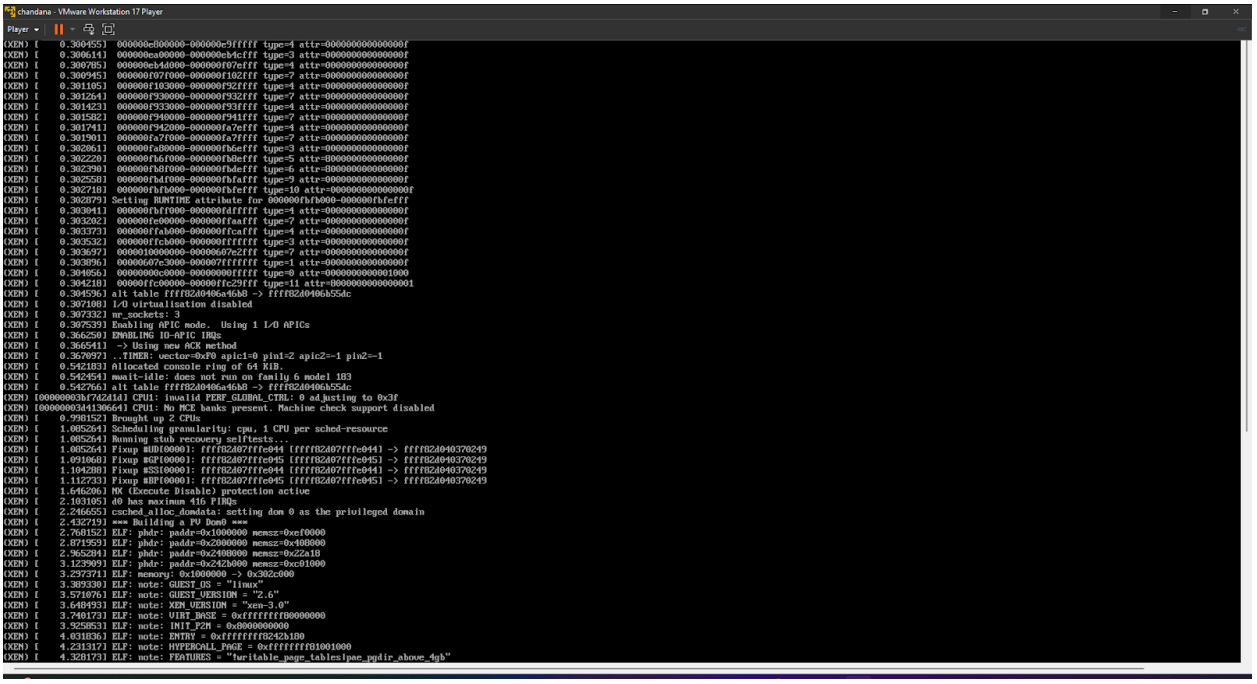

VMware Workstation 17 Player
Player
Home
Welcome to VMware Workstation 17 Player
Create a New Virtual Machine
Create a new virtual machine, which will then be added to the top of your library.
Open a Virtual Machine
Open an existing virtual machine, which will then be added to the top of your library.
Upgrade to VMware Workstation Pro
Get advanced features such as snapshots, virtual network management
Help
View online help.
New Virtual Machine Wizard
Name the Virtual Machine
What name would you like to use for this virtual machine?
Virtual machine name:
Windows 10 x64
Location:
C:\Users\Admin\Documents\Virtual Machines\Windows 10 x64
Browse...
< Back
Next >
Cancel

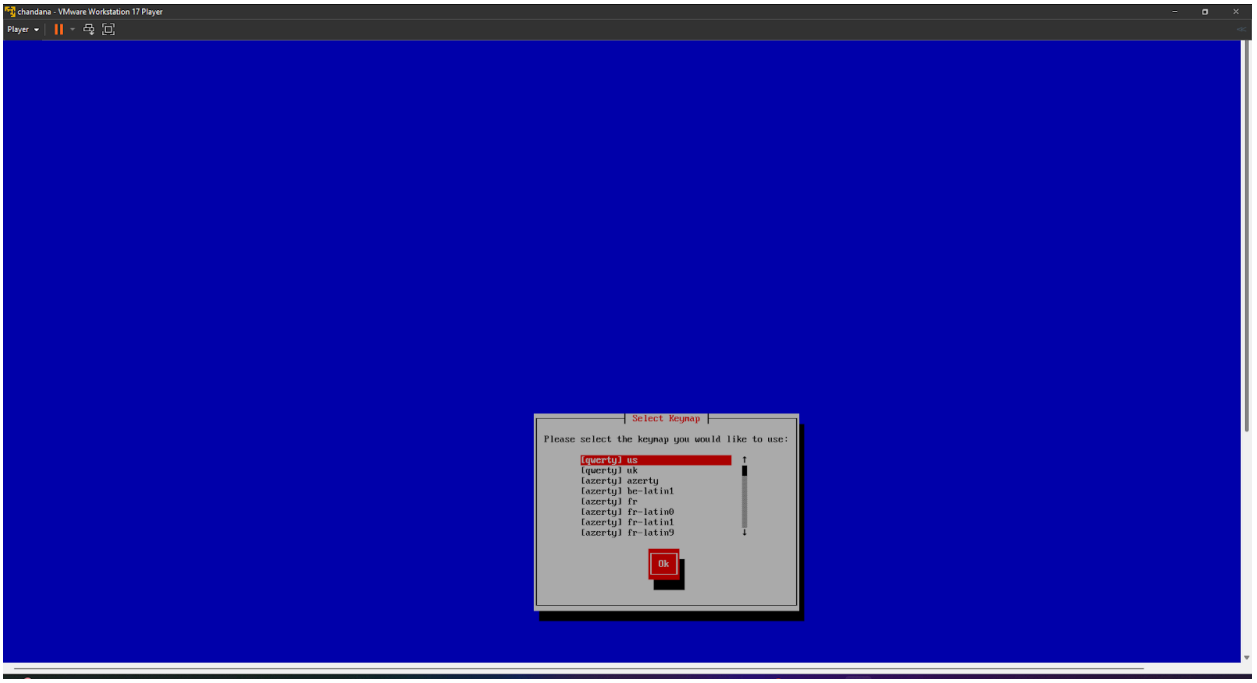

VMware Workstation 17 Player
Player
Home
Welcome to VMware Workstation 17 Player
Create a New Virtual Machine
Create a new virtual machine, which will then be added to the top of your library.
Open a Virtual Machine
Open an existing virtual machine, which will then be added to the top of your library.
Upgrade to VMware Workstation Pro
Get advanced features such as snapshots, virtual network management
Help
View online help.
New Virtual Machine Wizard
Specify Disk Capacity
How large do you want this disk to be?
The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.
Maximum disk size (GB):
60.0
Recommended size for Windows 10 x64: 60 GB
Store virtual disk as a single file
Split virtual disk into multiple files
Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.
Help
< Back
Next >
Cancel

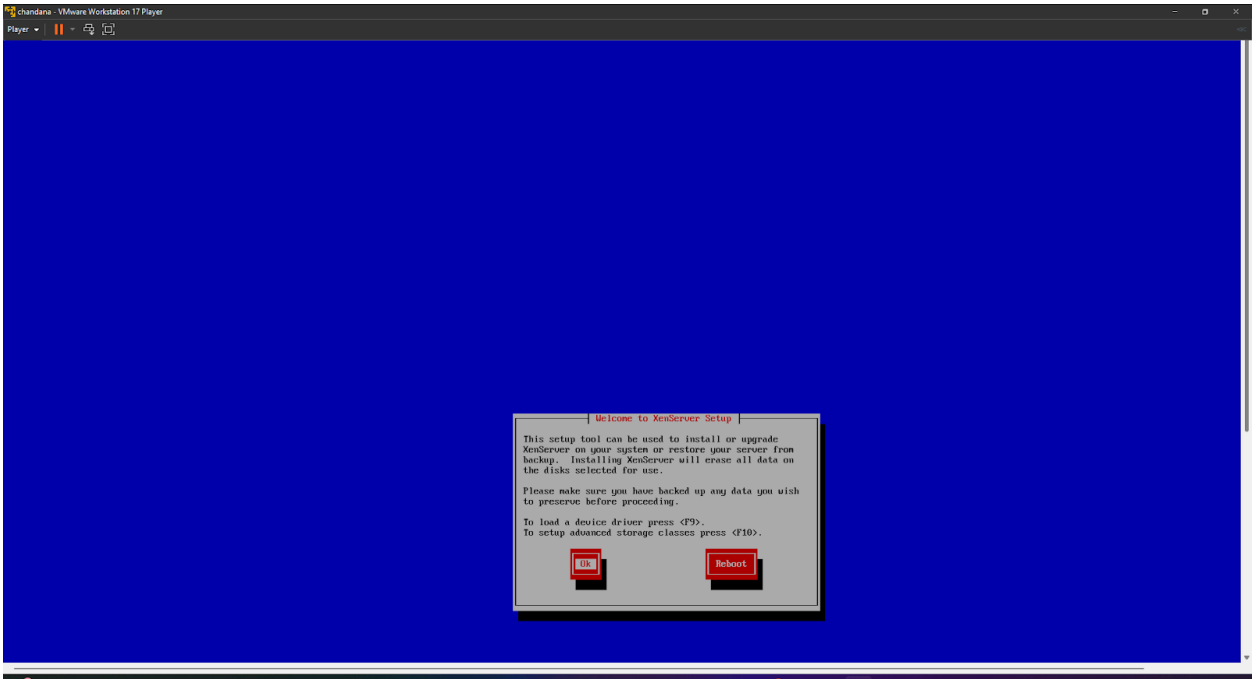

VMware Workstation 17 Player
Player
Home
Welcome to VMware Workstation 17 Player
Create a New Virtual Machine
Create a new virtual machine, which will then be added to the top of your library.
Open a Virtual Machine
Open an existing virtual machine, which will then be added to the top of your library.
Upgrade to VMware Workstation Pro
Get advanced features such as snapshots, virtual network management
Help
View online help.
New Virtual Machine Wizard
Ready to Create Virtual Machine
Click Finish to create the virtual machine. Then you can install Windows 10 x64.
The virtual machine will be created with the following settings:
Name: Windows 10 x64
Location: C:\Users\Admin\Documents\Virtual Machines\Window...
Version: Workstation 17.5 or later
Operating System: Windows 10 x64
Hard Disk: 60 GB, Split
Memory: 2048 MB
Network Adapter: NAT
Other Devices: 2 CPU cores, CD/DVD, USB Controller, Sound Card
Customize Hardware...
< Back
Finish
Cancel

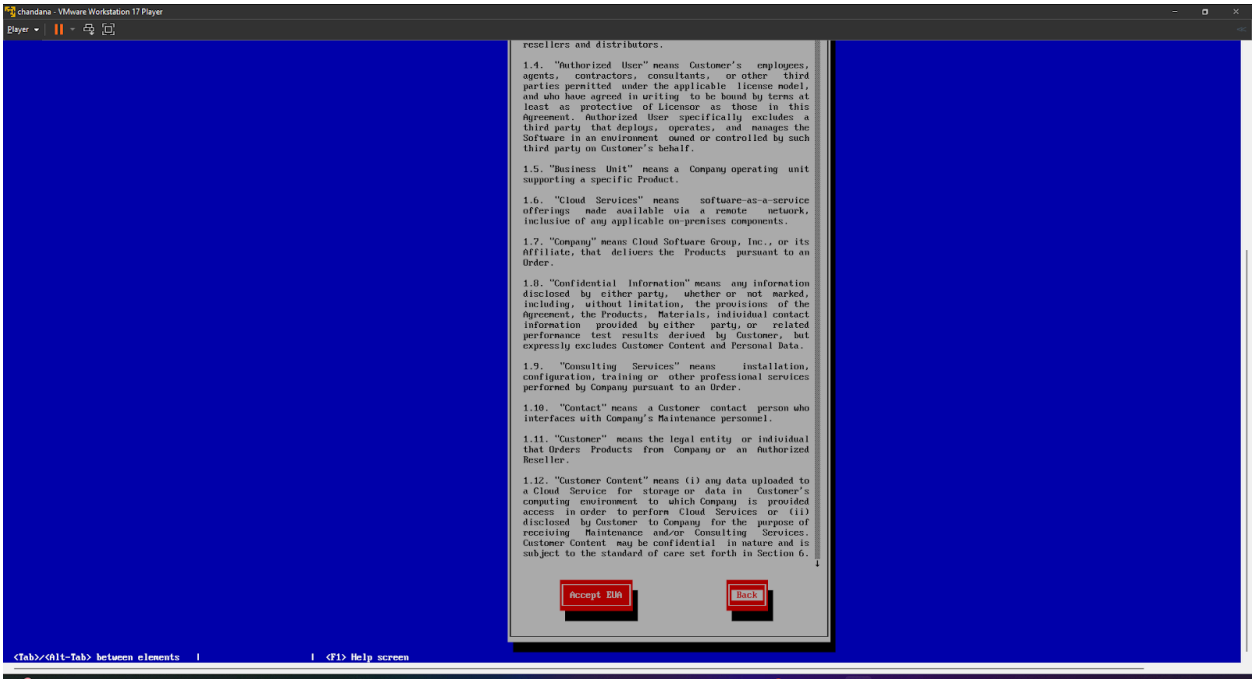

VMware Workstation 17 Player
Player
Home
Windows 10 x64
Virtual Machine Name:
Windows 10 x64
State: Powered Off
OS: Windows 10 x64
Version: Workstation 17.5 or later virtual
RAM: 2 GB
Play virtual machine
Edit virtual machine settings
Virtual Machine Settings
Hardware
Options
Device
Summary
Memory
2 GB
Processors
2
Hard Disk (NVMe)
60 GB
CD/DVD (SATA)
Using file C:\Users\Admin\Do...
Network Adapter
NAT
USB Controller
Present
Sound Card
Auto detect
Display
Auto detect
Add...
Remove
3D graphics
Accelerate 3D graphics
Monitors
Use host setting for monitors
Specify monitor settings:
Number of monitors:
1
Maximum resolution of any one monitor:
2560 x 1600
Display scaling
Automatically adjust user interface size in the virtual machine
To enable DPI synchronization in the virtual machine, update VMware Tools.
OK
Cancel
Help

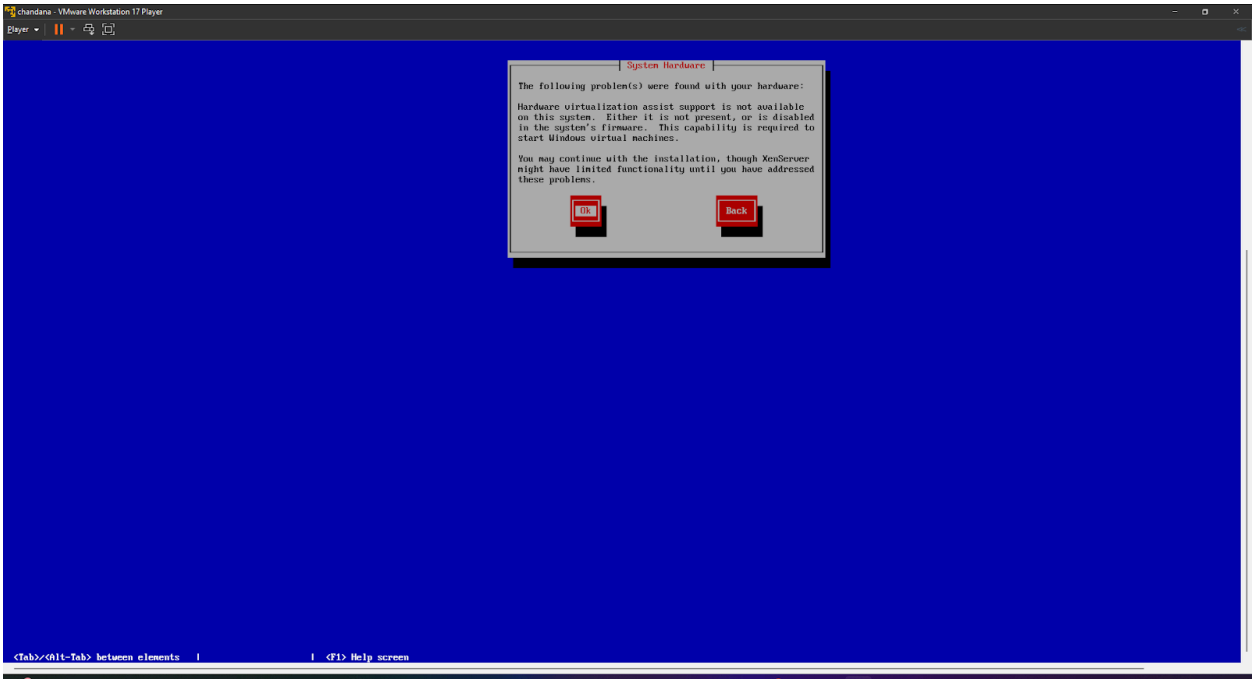

chandana - VMware Workstation 17 Player
Player
To direct input to this virtual machine, press Ctrl+G.
GNU GRUB version 2.06
*install
no-serial
safe
multipath
shell
advanced-options
Use the ▲ and ▼ keys to select which entry is highlighted.
Press enter to boot the selected OS, `e' to edit the commands
before booting or `c' for a command-line.
The highlighted entry will be executed automatically in 1s.

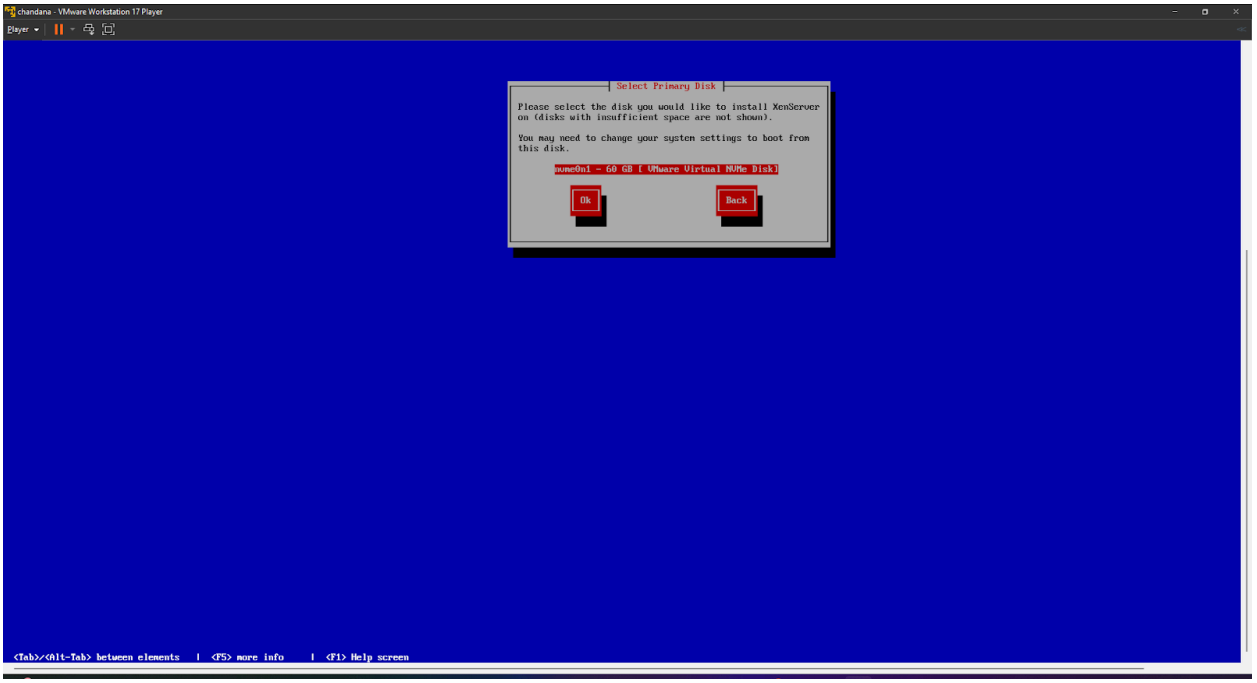

chandana - VMware Workstation 17 Player
Player
(XEN) [0.300455] 000000c800000-000000e9fffff type=4 attr=000000000000000f
(XEN) [0.300614] 000000ea00000-000000eb4dfff type=3 attr=000000000000000f
(XEN) [0.300785] 000000eb4d000-000000f07efff type=4 attr=000000000000000f
(XEN) [0.300945] 000000f07f000-000000f102fff type=7 attr=000000000000000f
(XEN) [0.301105] 000000f103000-000000f92ffff type=4 attr=000000000000000f
(XEN) [0.301264] 000000f930000-000000f932fff type=7 attr=000000000000000f
(XEN) [0.301423] 000000f933000-000000f93ffff type=4 attr=000000000000000f
(XEN) [0.301582] 000000f940000-000000f941fff type=7 attr=000000000000000f
(XEN) [0.301741] 000000f942000-000000fa7efff type=4 attr=000000000000000f
(XEN) [0.301901] 000000fa7f000-000000fa7ffff type=7 attr=000000000000000f
(XEN) [0.302061] 000000fa80000-000000fbdefff type=3 attr=000000000000000f
(XEN) [0.302220] 000000fbdf000-000000fbdffff type=5 attr=800000000000000f
(XEN) [0.302390] 000000fbe0000-000000fbdefff type=6 attr=800000000000000f
(XEN) [0.302558] 000000fbdf000-000000fbfafff type=9 attr=000000000000000f
(XEN) [0.302718] 000000fbfb000-000000fbfefff type=10 attr=000000000000000f
(XEN) [0.302879] Setting RUNTIME attribute for 000000fbfb000-000000fbfefff
(XEN) [0.303041] 000000fbff000-000000fdfffff type=4 attr=000000000000000f
(XEN) [0.303202] 000000fe00000-000000ffaafff type=7 attr=000000000000000f
(XEN) [0.303373] 000000ffab000-000000ffcafff type=4 attr=000000000000000f
(XEN) [0.303532] 000000ffcb000-000000fffffff type=3 attr=000000000000000f
(XEN) [0.303697] 0000010000000-00000607e2fff type=7 attr=000000000000000f
(XEN) [0.303896] 00000607e3000-000007fffffff type=1 attr=000000000000000f
(XEN) [0.304056] 00000000c0000-00000000fffff type=0 attr=0000000000001000
(XEN) [0.304218] 00000ffc00000-00000ffc29fff type=11 attr=0000000000000001
(XEN) [0.304596] alt table ffff82d0406a46b0 -> ffff82d0406b55dc
(XEN) [0.307108] I/O virtualisation disabled
(XEN) [0.307332] nr_sockets: 3
(XEN) [0.307539] Enabling APIC mode. Using 1 I/O APICs
(XEN) [0.366250] ENABLING IO-APIC IRQs
(XEN) [0.366541] -> Using new ACK method
(XEN) [0.367097] ..TIMER: vector=0xF0 apic1=0 pin1=2 apic2=-1 pin2=-1
(XEN) [0.542183] Allocated console ring of 64 KiB.
(XEN) [0.542454] mwait-idle: does not run on family 6 model 183
(XEN) [0.542766] alt table ffff82d0406a46b0 -> ffff82d0406b55dc
(XEN) [0000000d3bf74241d] CPU1: invalid PERF_GLOBAL_CTRL: 0 adjusting to 0x3f
(XEN) [0000000d341306641] CPU1: No MCE banks present. Machine check support disabled
(XEN) [0.998152] Brought up 2 CPUs
(XEN) [1.005264] Scheduling granularity: cpu, 1 CPU per sched-resource
(XEN) [1.005264] Running stub recovery selftests...
(XEN) [1.005264] Fixup #UD(0000): ffff82d07fffe044 [ffff82d07fffe044] -> ffff82d040370249
(XEN) [1.091068] Fixup #GP(0000): ffff82d07fffe045 [ffff82d07fffe045] -> ffff82d040370249
(XEN) [1.104288] Fixup #SS(0000): ffff82d07fffe044 [ffff82d07fffe044] -> ffff82d040370249
(XEN) [1.112733] Fixup #BP(0000): ffff82d07fffe045 [ffff82d07fffe045] -> ffff82d040370249
(XEN) [1.646206] NX (Execute Disable) protection active
(XEN) [2.103105] d0 has maximum 416 PIRQs
(XEN) [2.246655] csched_alloc_domdata: setting dom 0 as the privileged domain
(XEN) [2.432719] *** Building a PV Dom0 ***
(XEN) [2.768152] ELF: phdr: paddr=0x1000000 memsz=0xcf0000
(XEN) [2.871959] ELF: phdr: paddr=0x2000000 memsz=0x488000
(XEN) [2.965284] ELF: phdr: paddr=0x2488000 memsz=0x22a18
(XEN) [3.123909] ELF: phdr: paddr=0x242b000 memsz=0xc01000
(XEN) [3.297371] ELF: memory: 0x1000000 -> 0x302c000
(XEN) [3.309330] ELF: note: GUEST_OS = "linux"
(XEN) [3.571076] ELF: note: GUEST_VERSION = "2.6"
(XEN) [3.648493] ELF: note: XEN_VERSION = "xen-3.0"
(XEN) [3.740173] ELF: note: VIRT_BASE = 0xffffffff80000000
(XEN) [3.925853] ELF: note: INIT_P2M = 0x8000000000
(XEN) [4.031836] ELF: note: ENTRY = 0xffffffff8242b180
(XEN) [4.231317] ELF: note: HYPERCALL_PAGE = 0xffffffff81001000
(XEN) [4.328173] ELF: note: FEATURES = "!writable_page_tables|pae_pgdir_above_4gb"

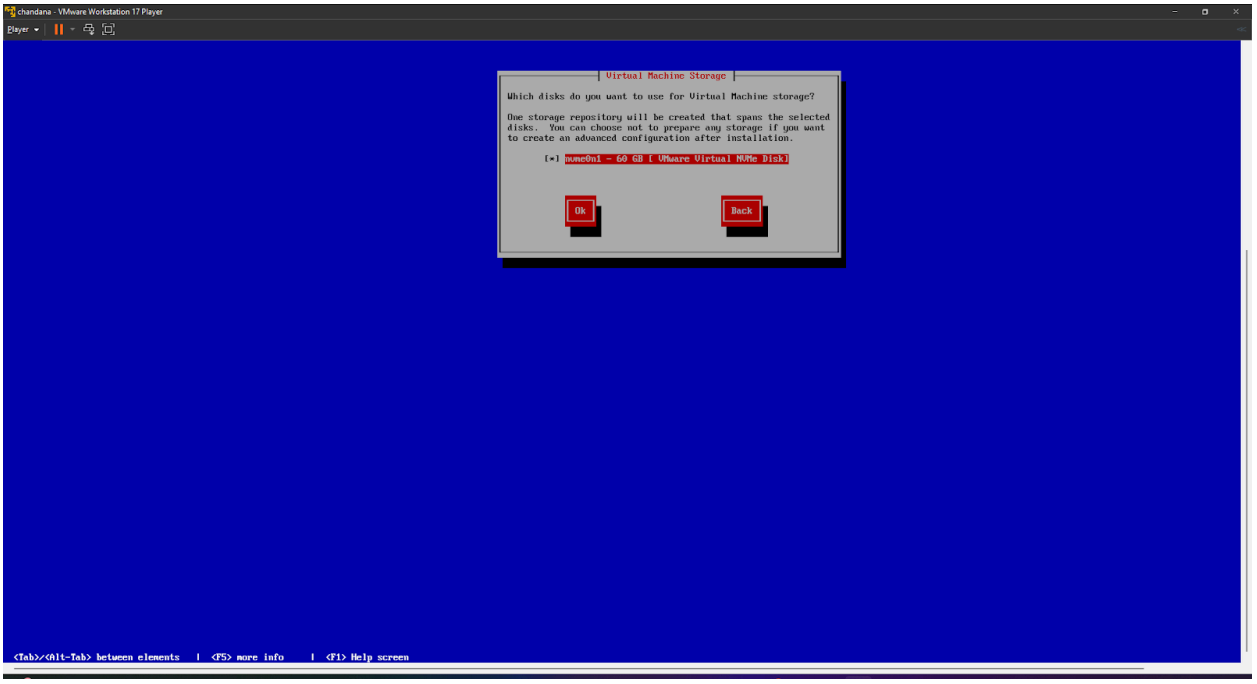

chandana - VMware Workstation 17 Player
Player
Select Keymap
Please select the keymap you would like to use:
[qwerty] us
[qwerty] uk
[azerty] azerty
[azerty] be-latin1
[azerty] fr
[azerty] fr-latin0
[azerty] fr-latin1
[azerty] fr-latin9
Ok

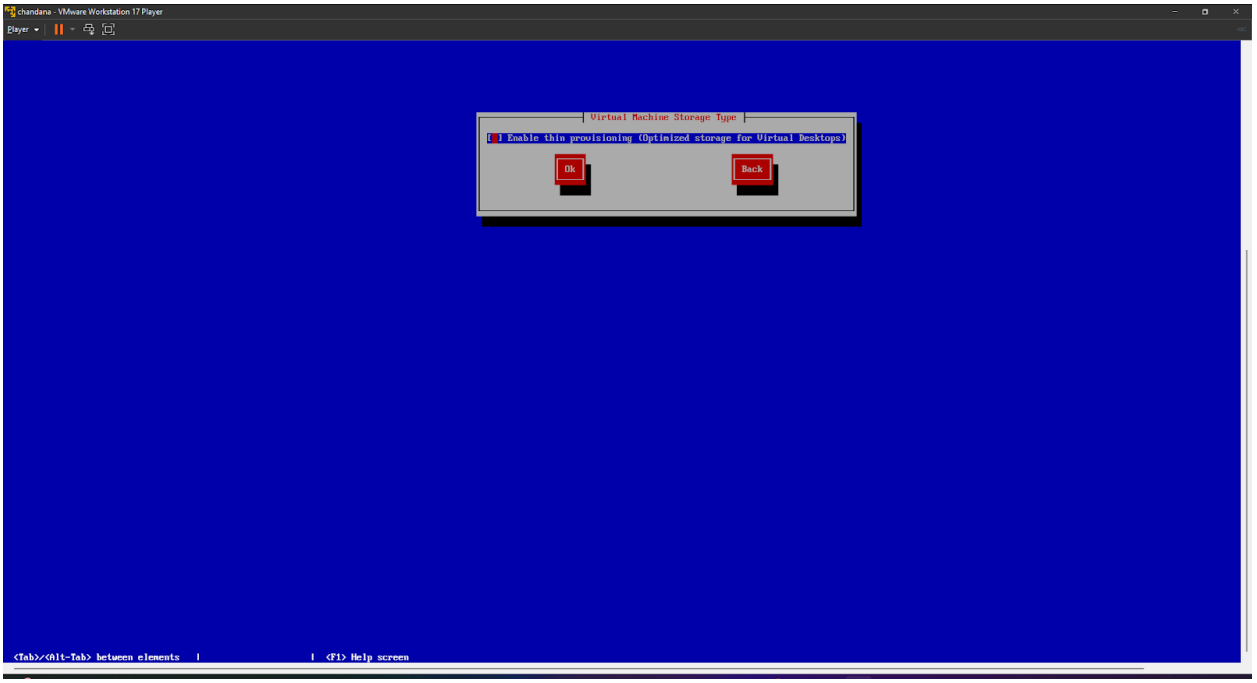

chandana - VMware Workstation 17 Player
Player
Welcome to XenServer Setup
This setup tool can be used to install or upgrade XenServer on your system or restore your server from backup. Installing XenServer will erase all data on the disks selected for use.
Please make sure you have backed up any data you wish to preserve before proceeding.
To load a device driver press <F9>.
To setup advanced storage classes press <F10>.
Ok
Reboot

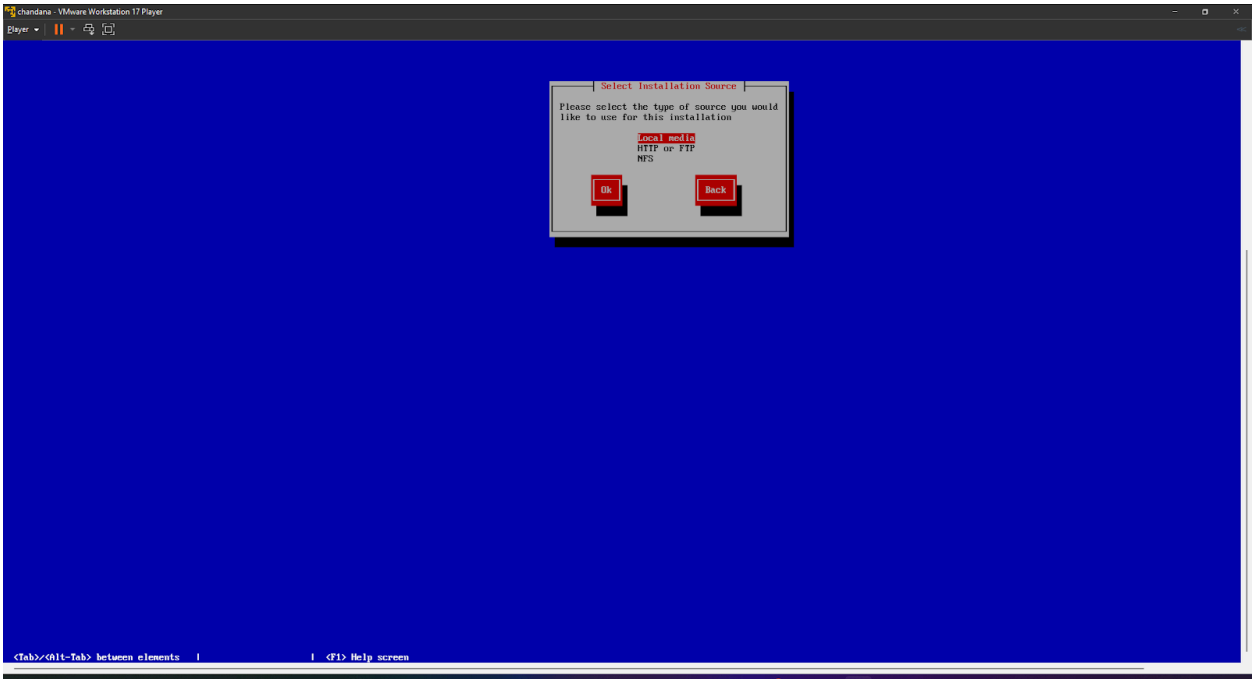

chandana - VMware Workstation 17 Player
Player
resellers and distributors.
1.4. "Authorized User" means Customer's employees, agents, contractors, consultants, or other third parties permitted under the applicable license model, and who have agreed in writing to be bound by terms at least as protective of Licensor as those in this Agreement. Authorized User specifically excludes a third party that deploys, operates, and manages the Software in an environment owned or controlled by such third party on Customer's behalf.
1.5. "Business Unit" means a Company operating unit supporting a specific Product.
1.6. "Cloud Services" means software-as-a-service offerings made available via a remote network, inclusive of any applicable on-premises components.
1.7. "Company" means Cloud Software Group, Inc., or its Affiliate, that delivers the Products pursuant to an Order.
1.8. "Confidential Information" means any information disclosed by either party, whether or not marked, including, without limitation, the provisions of the Agreement, the Products, Materials, individual contact information provided by either party, or related performance test results derived by Customer, but expressly excludes Customer Content and Personal Data.
1.9. "Consulting Services" means installation, configuration, training or other professional services performed by Company pursuant to an Order.
1.10. "Contact" means a Customer contact person who interfaces with Company's Maintenance personnel.
1.11. "Customer" means the legal entity or individual that Orders Products from Company or an Authorized Reseller.
1.12. "Customer Content" means (i) any data uploaded to a Cloud Service for storage or data in Customer's computing environment to which Company is provided access in order to perform Cloud Services or (ii) disclosed by Customer to Company for the purpose of receiving Maintenance and/or Consulting Services. Customer Content may be confidential in nature and is subject to the standard of care set forth in Section 6.
Accept EULA
Back
<Tab>/<Alt-Tab> between elements
<F1> Help screen

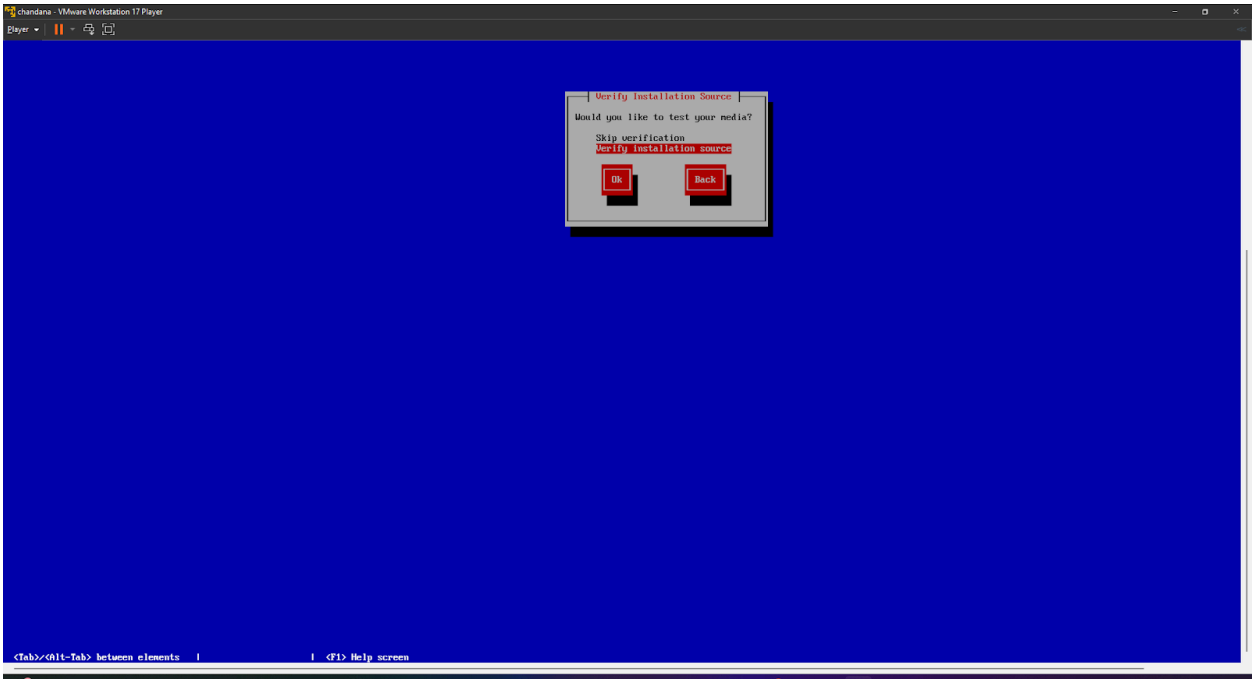

chandana - VMware Workstation 17 Player
Player
System Hardware
The following problem(s) were found with your hardware:
Hardware virtualization assist support is not available on this system. Either it is not present, or is disabled in the system's firmware. This capability is required to start Windows virtual machines.
You may continue with the installation, though XenServer might have limited functionality until you have addressed these problems.
Ok
Back
<Tab>/<Alt-Tab> between elements
<F1> Help screen

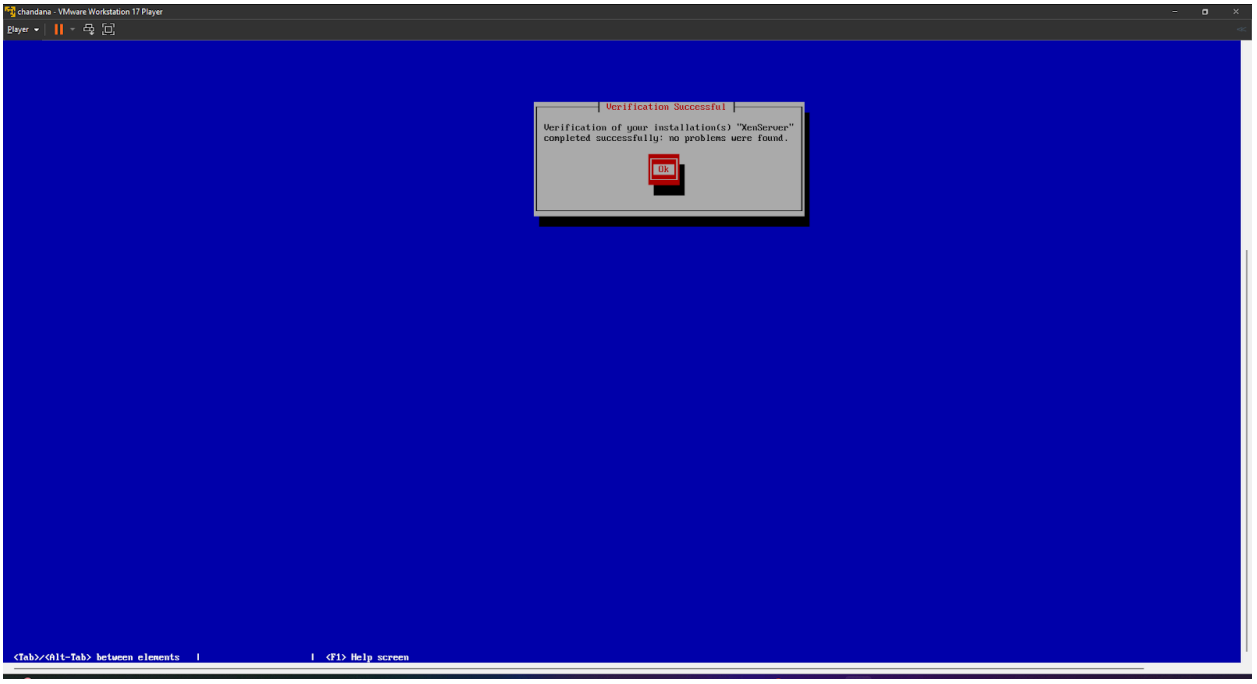

chandana - VMware Workstation 17 Player
Player
Select Primary Disk
Please select the disk you would like to install XenServer on (disks with insufficient space are not shown).
You may need to change your system settings to boot from this disk.
nvme0n1 - 60 GB [VMware Virtual NVMe Disk]
Ok
Back
<Tab>/<Alt-Tab> between elements | <F5> more info | <F1> Help screen

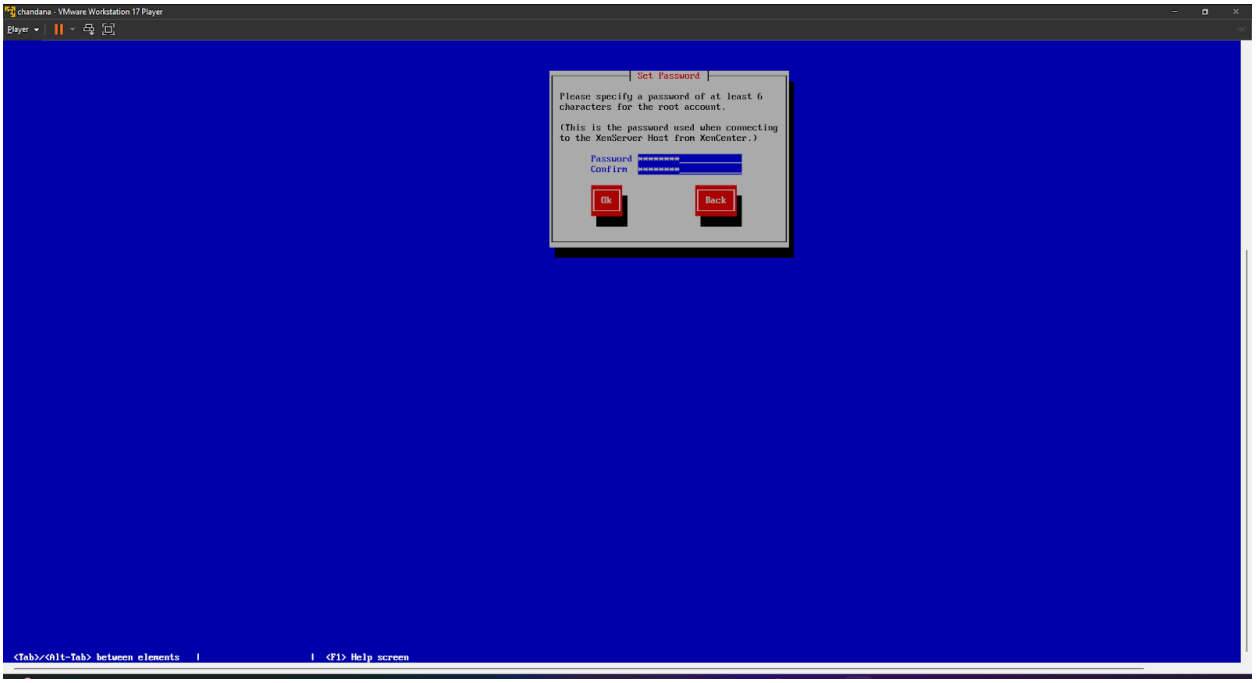

chandana - VMware Workstation 17 Player
Player
Virtual Machine Storage
Which disks do you want to use for Virtual Machine storage?
One storage repository will be created that spans the selected disks. You can choose not to prepare any storage if you want to create an advanced configuration after installation.
[*] nvme0n1 - 60 GB [VMware Virtual NVMe Disk]
Ok
Back
<Tab>/<Alt-Tab> between elements | <F5> more info | <F1> Help screen

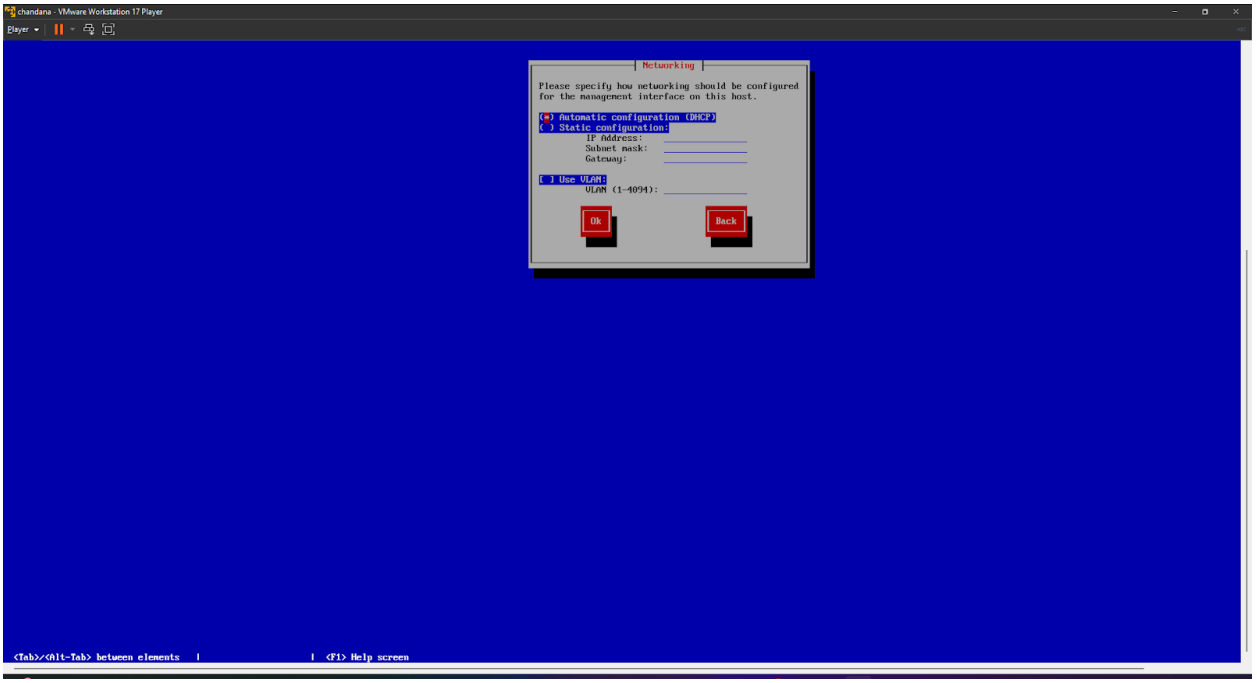

chandana - VMware Workstation 17 Player
Player
Virtual Machine Storage Type
[ ] Enable thin provisioning (Optimized storage for Virtual Desktops)
Ok
Back
<Tab>/<Alt-Tab> between elements
<F1> Help screen

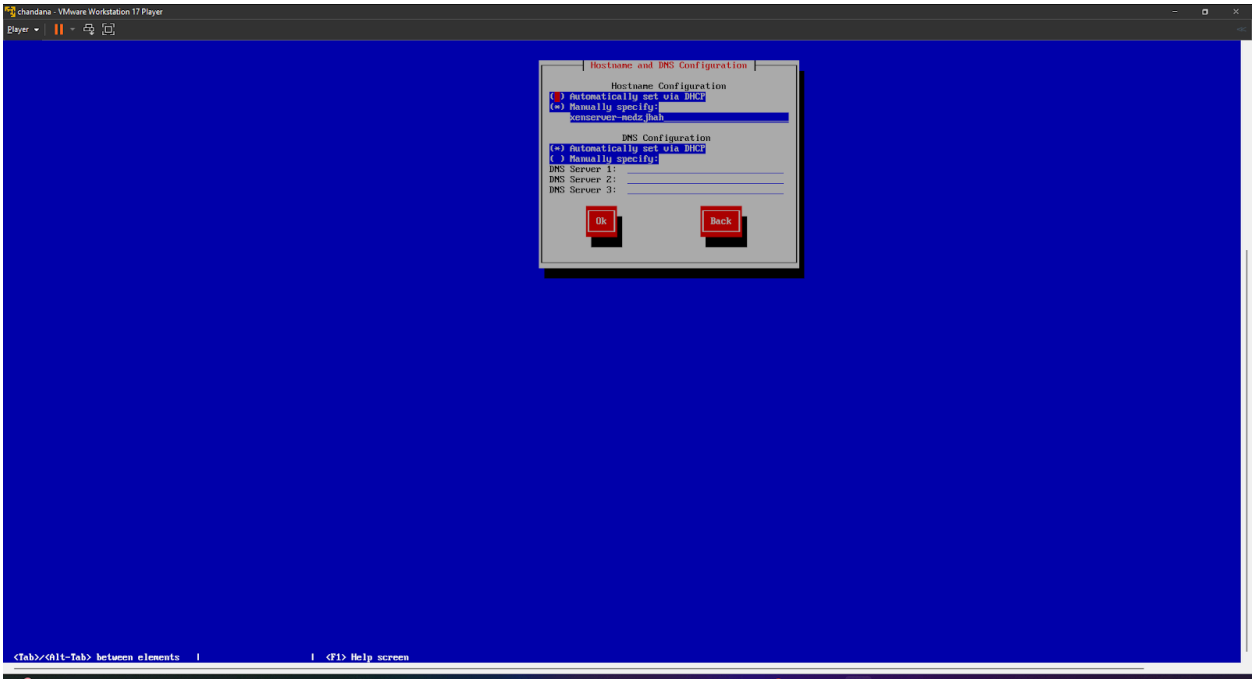

chandana - VMware Workstation 17 Player
Player
Select Installation Source
Please select the type of source you would like to use for this installation
local media
HTTP or FTP
NFS
Ok
Back
<Tab>/<Alt-Tab> between elements
<F1> Help screen

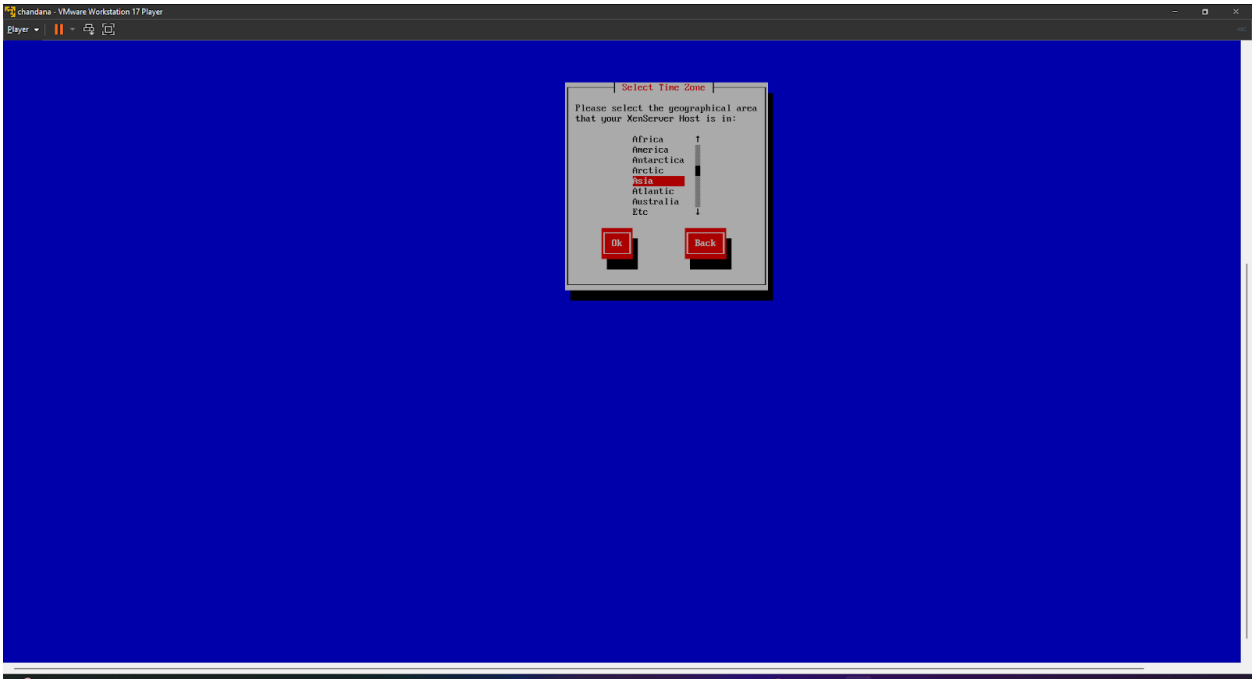

chandana - VMware Workstation 17 Player
Player
Verify Installation Source
Would you like to test your media?
Skip verification
Verify installation source
Ok
Back
<Tab>/<Alt-Tab> between elements
<F1> Help screen

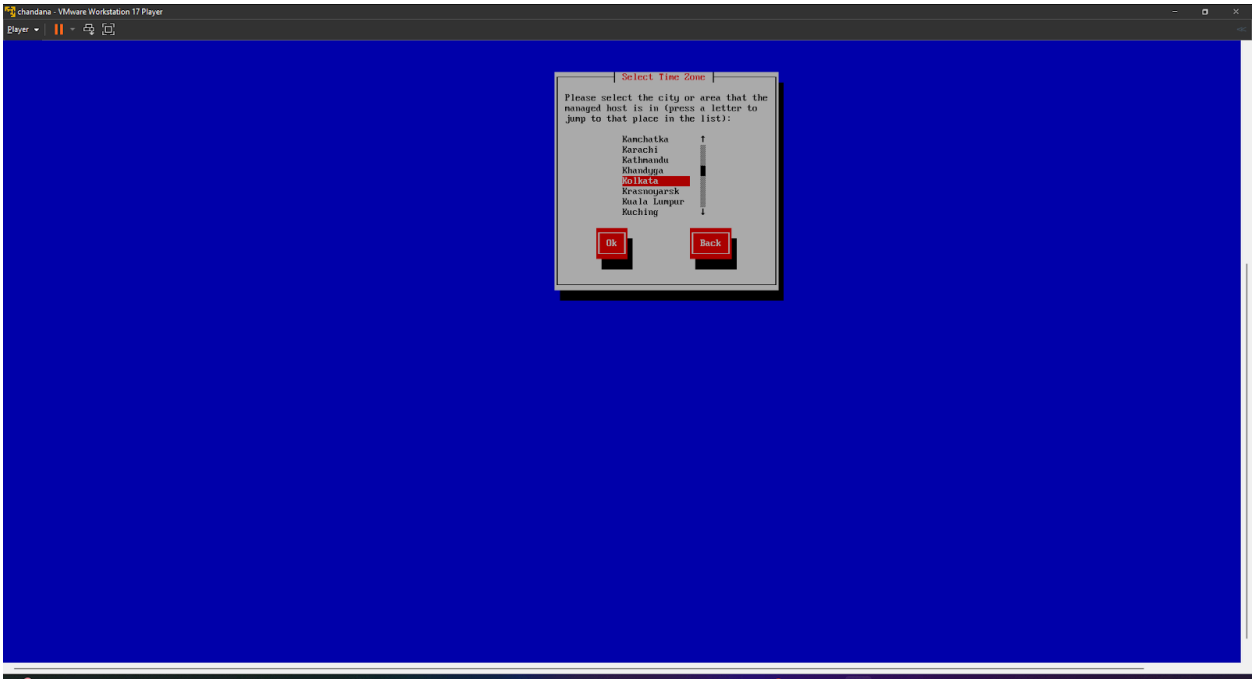

chandana - VMware Workstation 17 Player
Player
Verification Successful
Verification of your installation(s) "XenServer"
completed successfully: no problems were found.
Ok
<Tab>/<Alt-Tab> between elements
<F1> Help screen

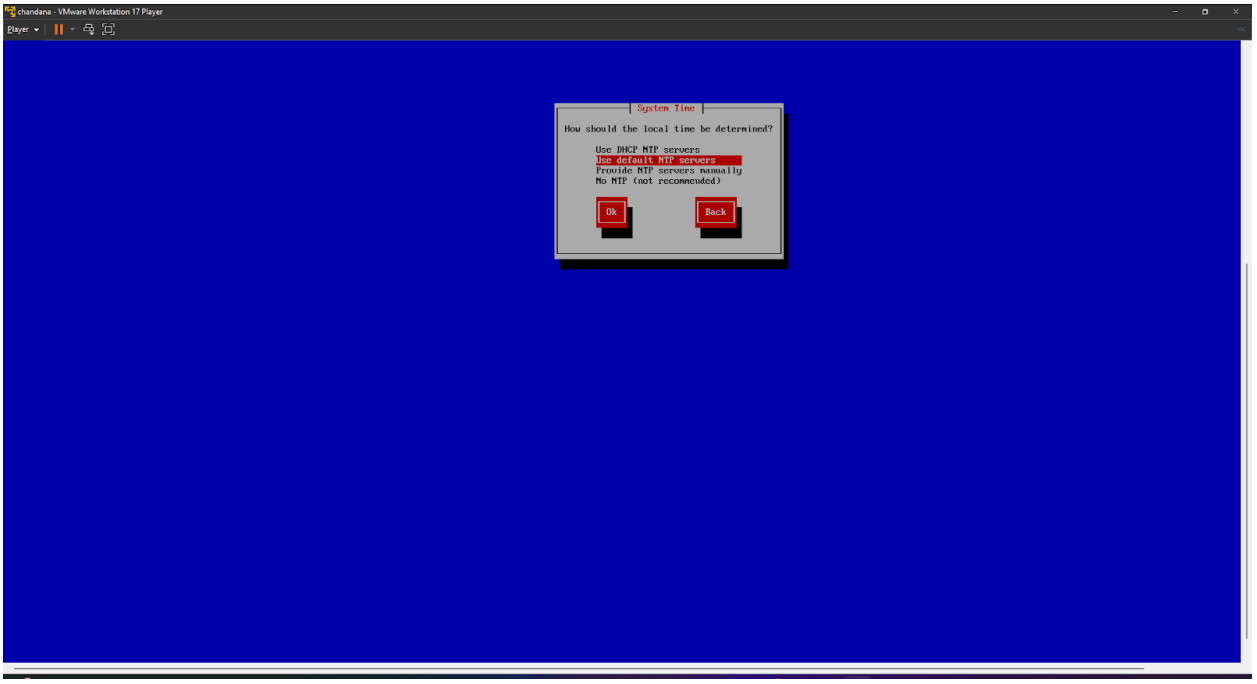

chandana - VMware Workstation 17 Player
Player
Set Password
Please specify a password of at least 6 characters for the root account.
(This is the password used when connecting to the XenServer Host from XenCenter.)
Password
Confirm
Ok
Back
<Tab>/<Alt-Tab> between elements
<F1> Help screen

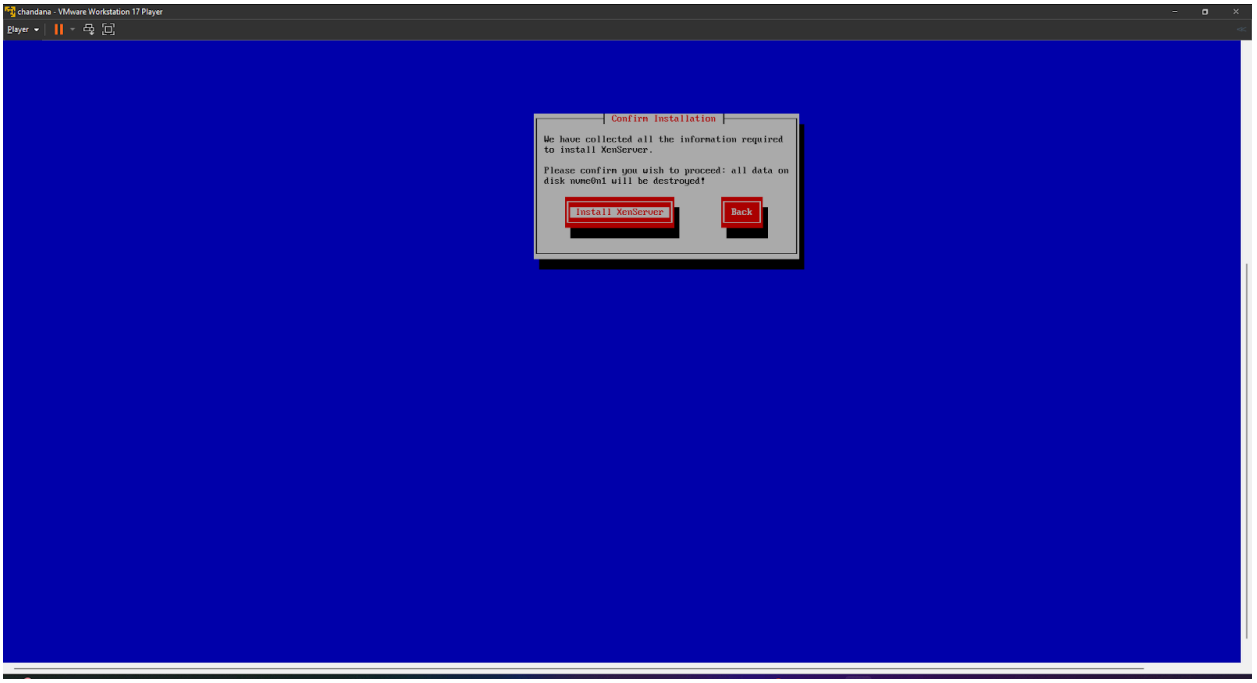

chandana - VMware Workstation 17 Player
Player
Networking
Please specify how networking should be configured for the management interface on this host.
(*) Automatic configuration (DHCP)
( ) Static configuration:
IP Address:
Subnet mask:
Gateway:
[ ] Use VLAN:
VLAN (1-4094):
Ok
Back
<Tab>/<Alt-Tab> between elements
<F1> Help screen

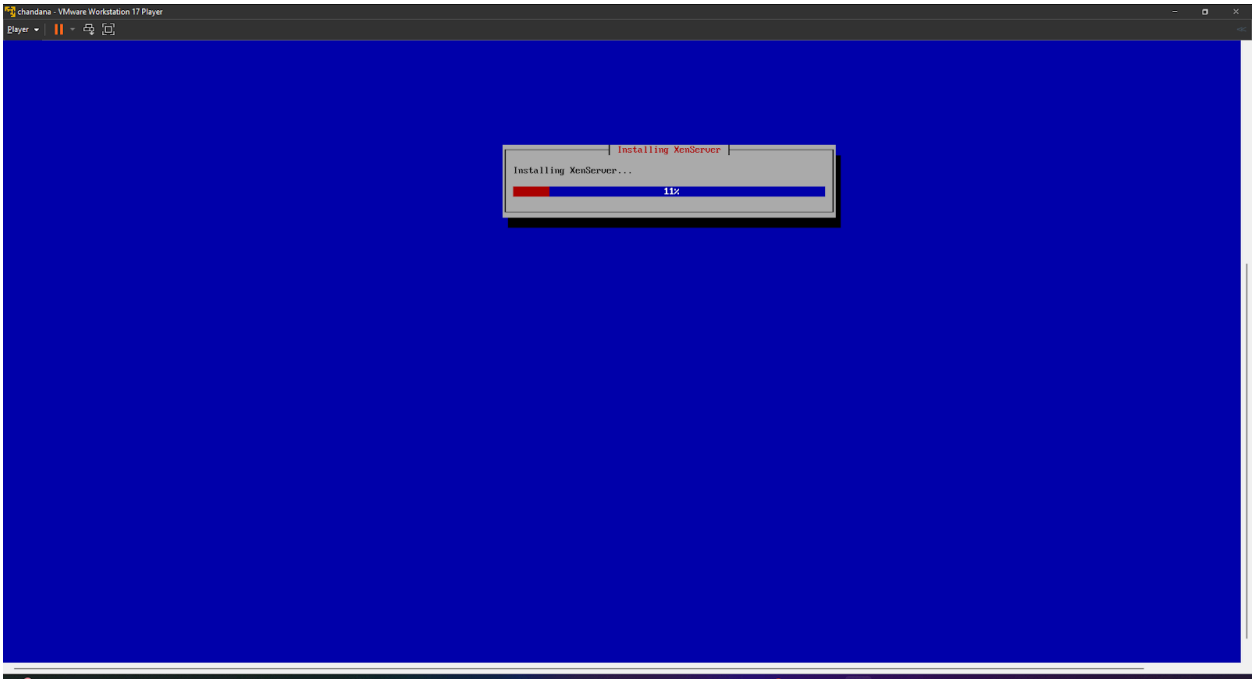

chandana - VMware Workstation 17 Player
Player
Hostname and DNS Configuration
Hostname Configuration
(*) Automatically set via DHCP
( ) Manually specify:
xenserver-medz.jhah
DNS Configuration
(*) Automatically set via DHCP
( ) Manually specify:
DNS Server 1:
DNS Server 2:
DNS Server 3:
Ok
Back
<Tab>/<Alt-Tab> between elements | <F1> Help screen

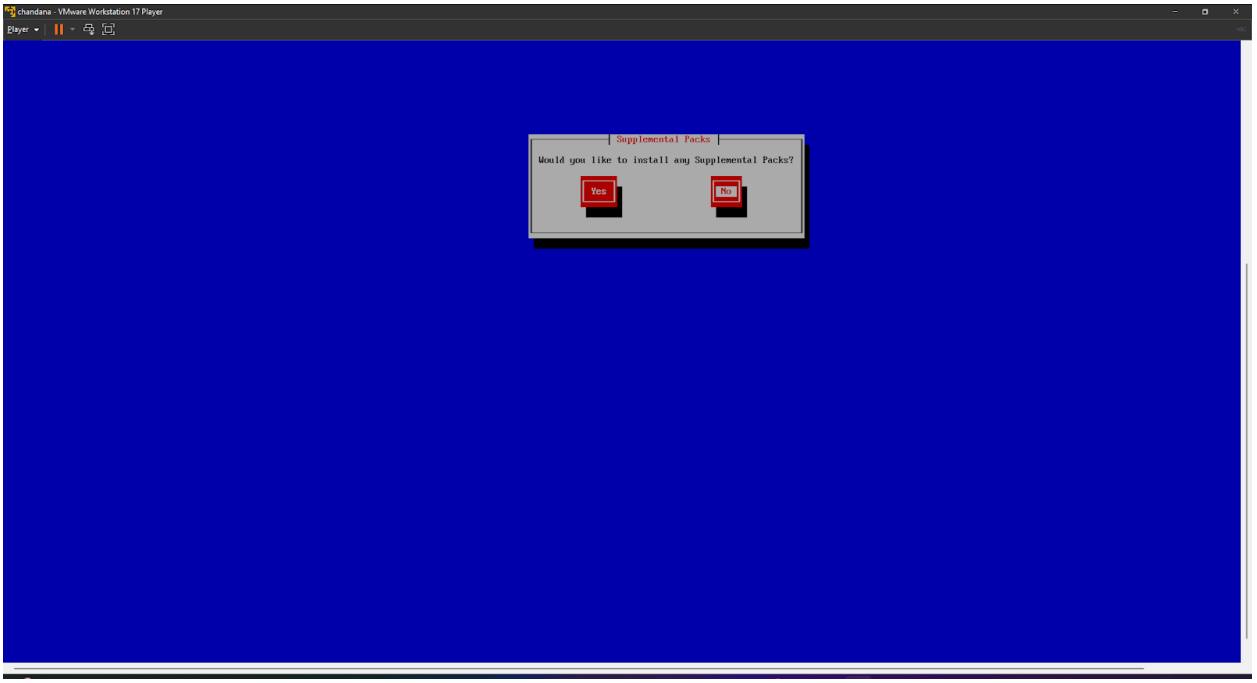

chandana - VMware Workstation 17 Player
Player
Select Time Zone
Please select the geographical area that your XenServer Host is in:
Africa
America
Antarctica
Arctic
Asia
Atlantic
Australia
Etc
Ok
Back

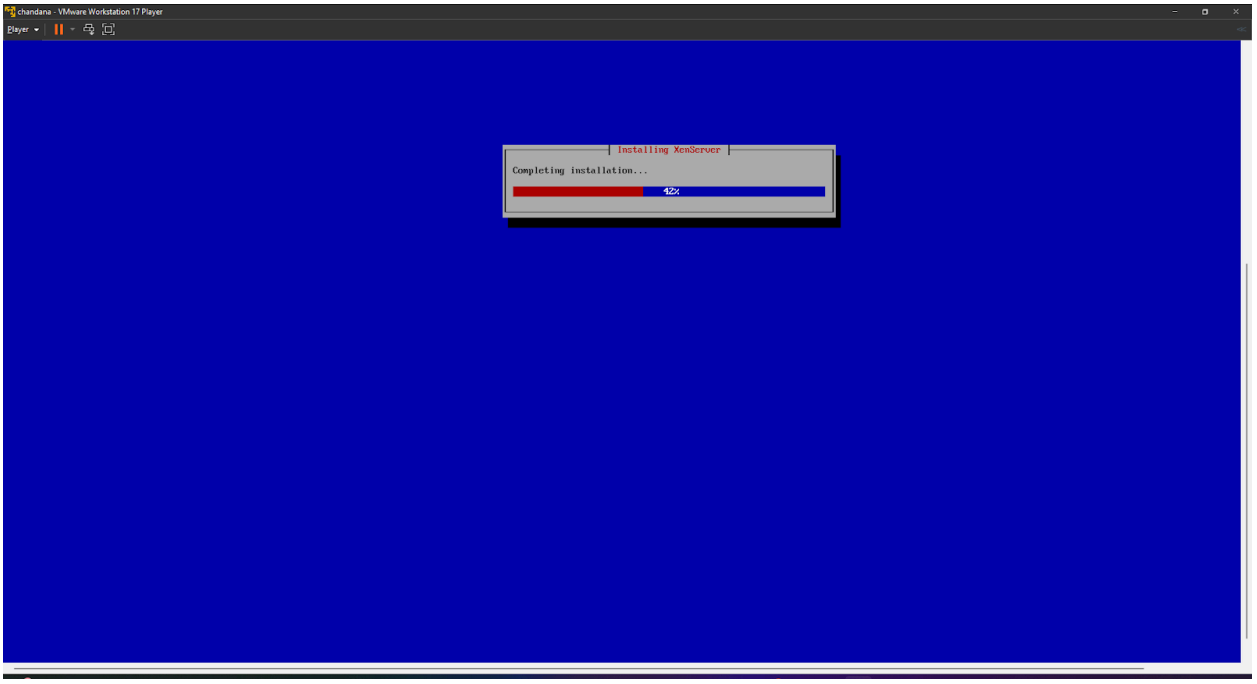

chandana - VMware Workstation 17 Player
Player
Select Time Zone
Please select the city or area that the managed host is in (press a letter to jump to that place in the list):
Kamchatka
Karachi
Kathmandu
Khandyga
Kolkata
Krasnoyarsk
Kuala Lumpur
Kuching
Ok
Back

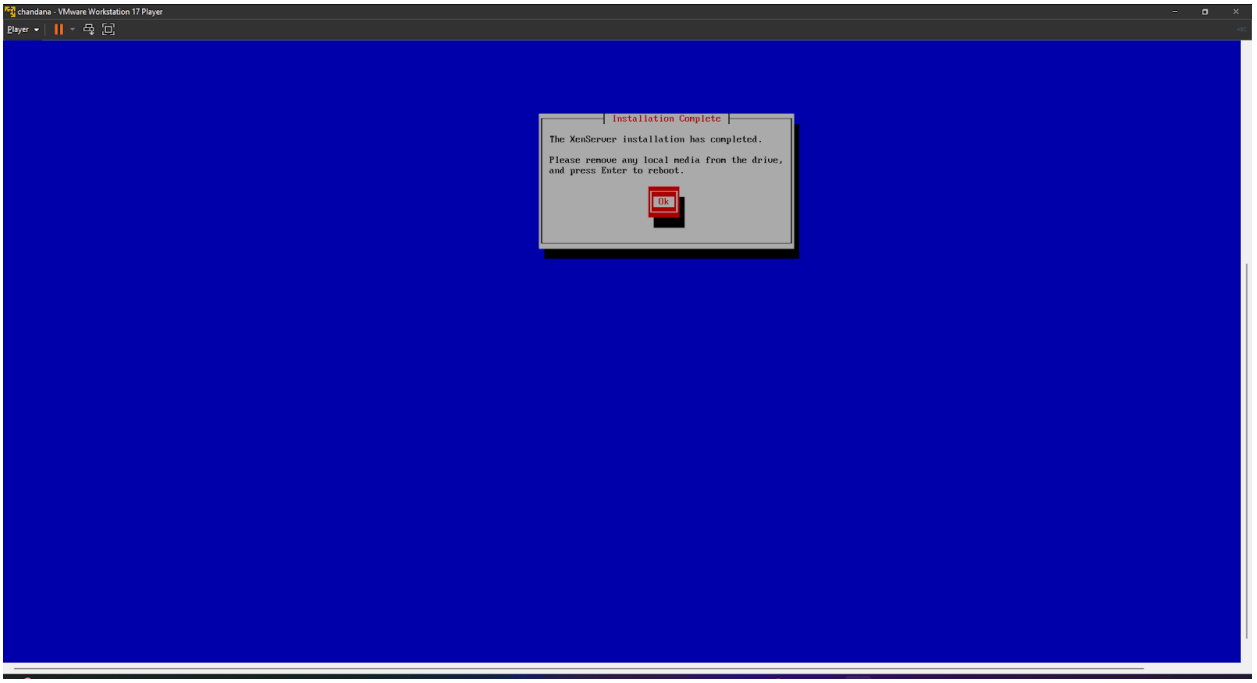

chandana - VMware Workstation 17 Player
Player
System Time
How should the local time be determined?
Use DHCP NTP servers
Use default NTP servers
Provide NTP servers manually
No NTP (not recommended)
Ok
Back

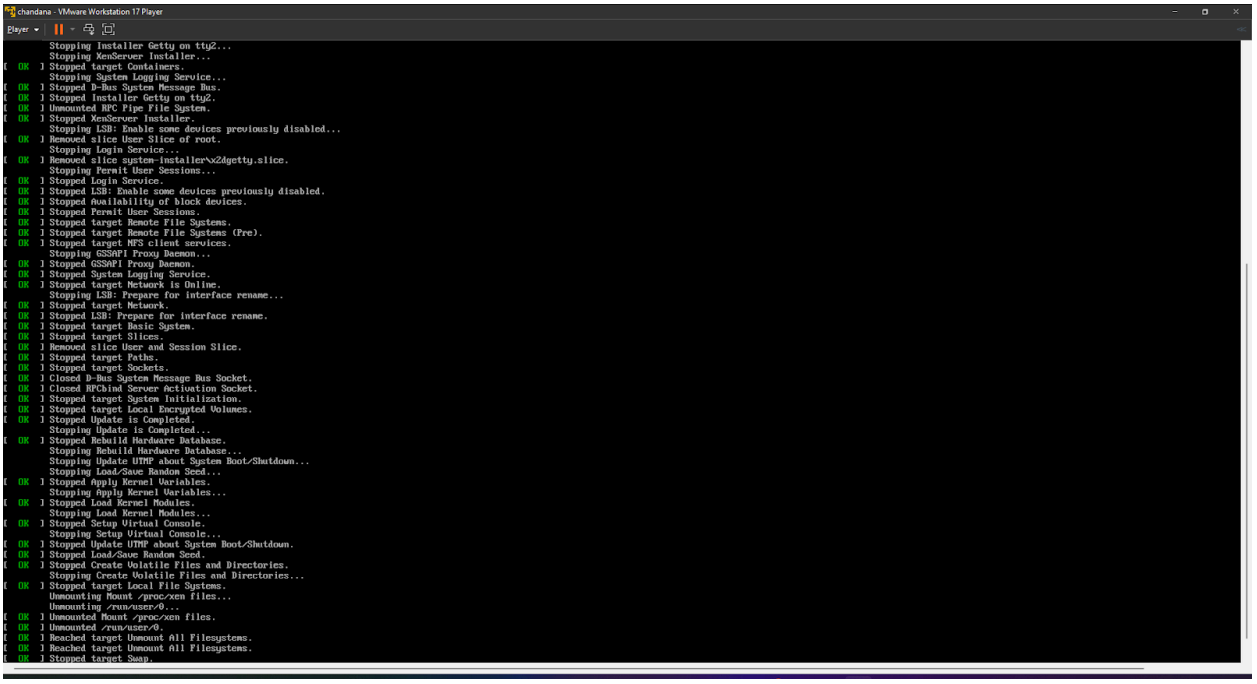

chandana - VMware Workstation 17 Player
Player
Confirm Installation
We have collected all the information required to install XenServer.
Please confirm you wish to proceed: all data on disk nvme0n1 will be destroyed!
Install XenServer
Back

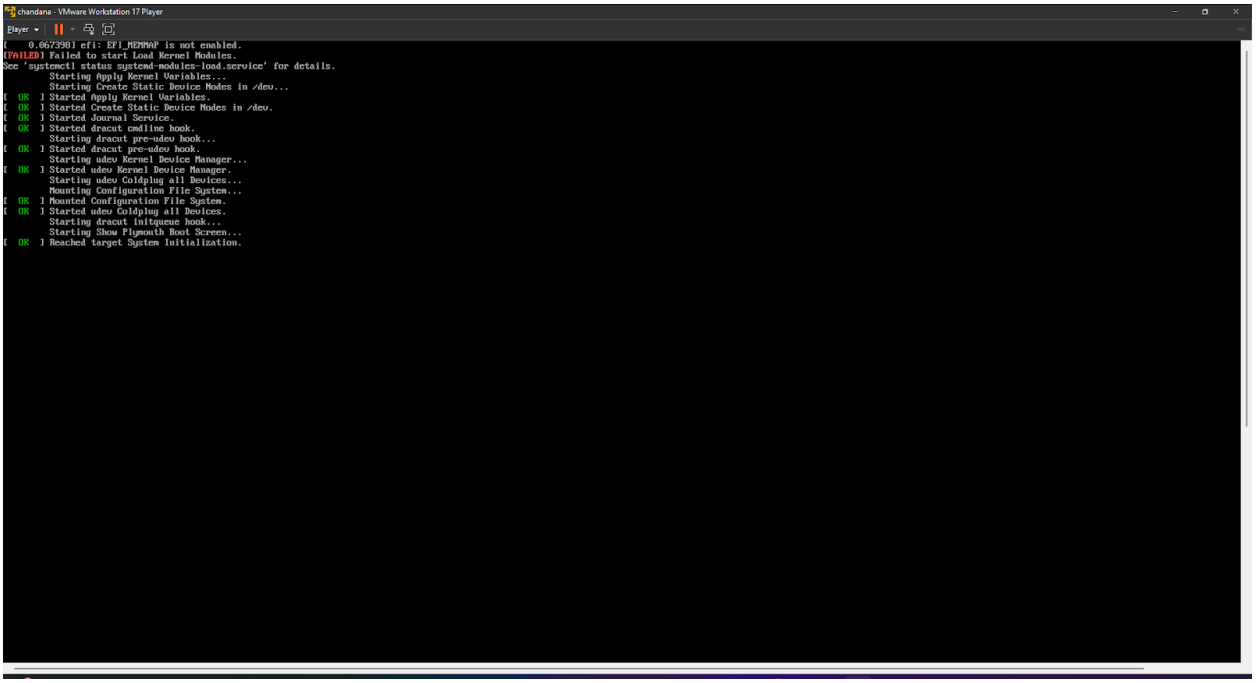

chandana - VMware Workstation 17 Player
Player
Installing XenServer
Installing XenServer...
11%

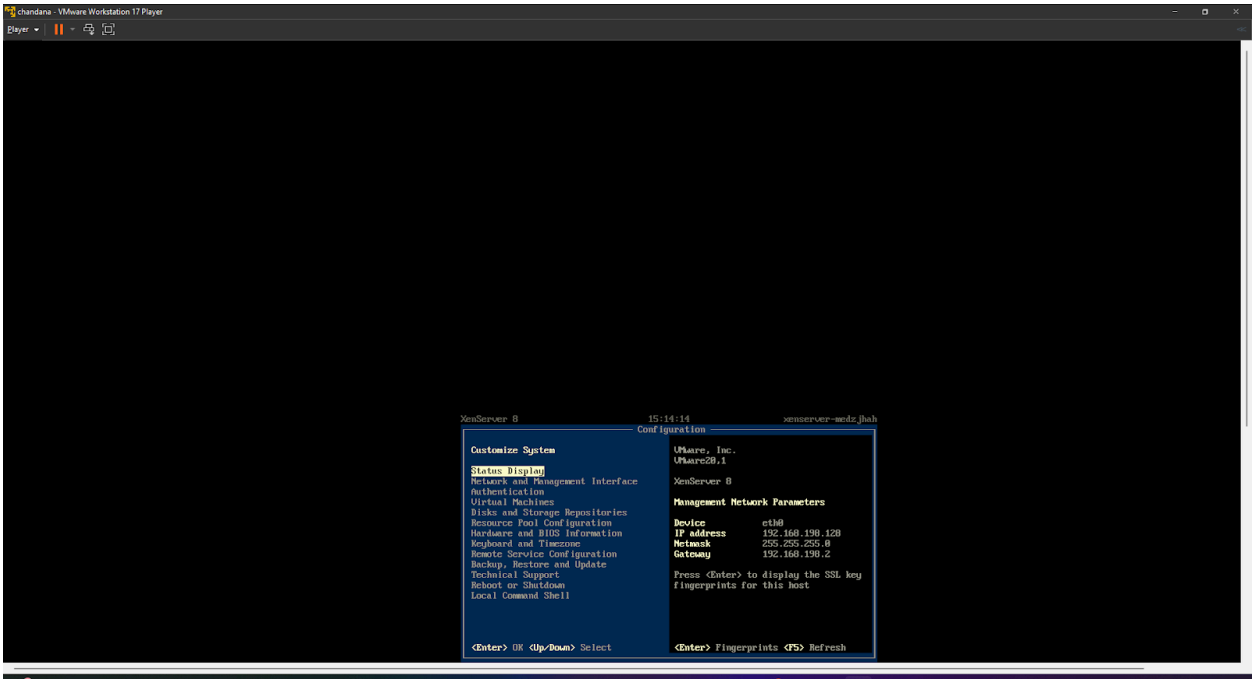

chandana - VMware Workstation 17 Player
Player
Supplemental Packs
Would you like to install any Supplemental Packs?
Yes
No

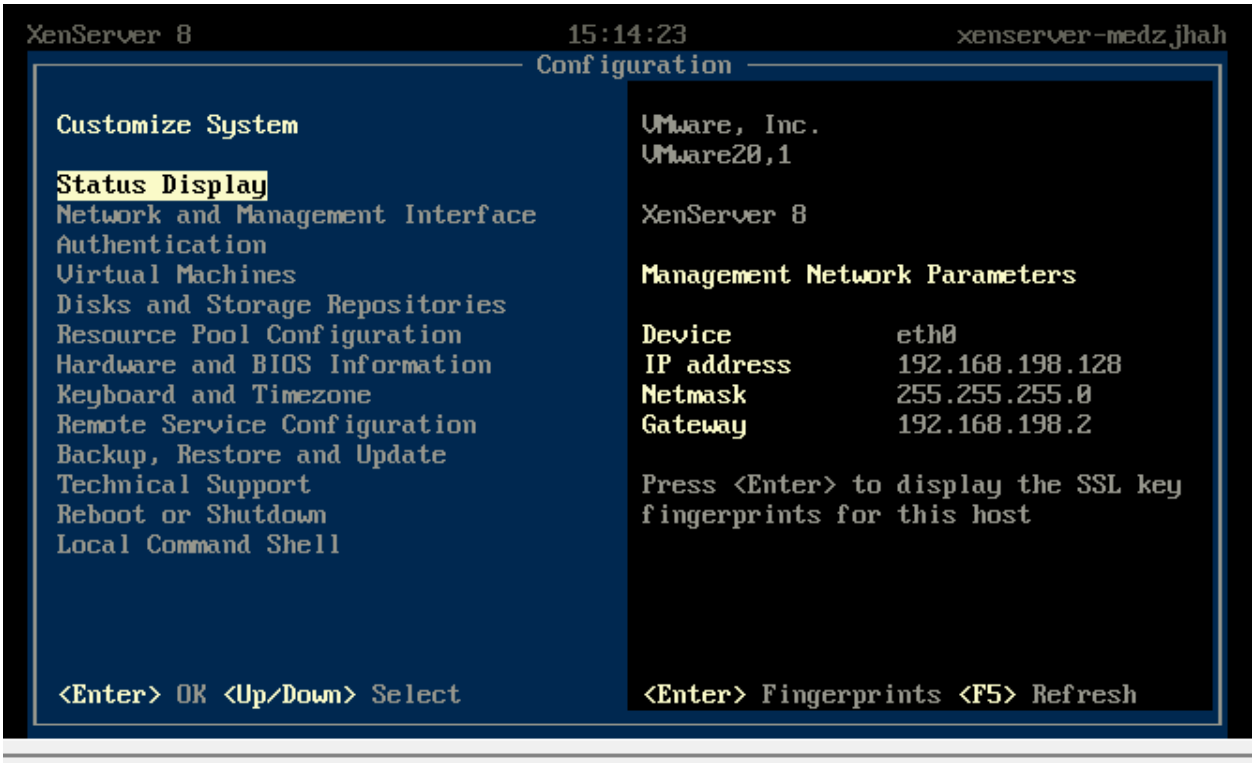

chandana - VMware Workstation 17 Player
Player
Installing XenServer
Completing installation...
42%


chandana - VMware Workstation 17 Player
Player
Installation Complete
The XenServer installation has completed.
Please remove any local media from the drive, and press Enter to reboot.
Ok


chandana - VMware Workstation 17 Player
Player
Stopping Installer Getty on tty2...
Stopping XenServer Installer...
[OK] Stopped target Containers.
Stopping System Logging Service...
[OK] Stopped D-Bus System Message Bus.
[OK] Stopped Installer Getty on tty2.
[OK] Unmounted RPC Pipe File System.
[OK] Stopped XenServer Installer.
Stopping LSB: Enable some devices previously disabled...
[OK] Removed slice User Slice of root.
Stopping Login Service...
[OK] Removed slice system-installer\x2dgetty.slice.
Stopping Permit User Sessions...
[OK] Stopped Login Service.
[OK] Stopped LSB: Enable some devices previously disabled.
[OK] Stopped Availability of block devices.
[OK] Stopped Permit User Sessions.
[OK] Stopped target Remote File Systems.
[OK] Stopped target Remote File Systems (Pre).
[OK] Stopped target NFS client services.
Stopping GSSAPI Proxy Daemon...
[OK] Stopped GSSAPI Proxy Daemon.
[OK] Stopped System Logging Service.
[OK] Stopped target Network is Online.
Stopping LSB: Prepare for interface rename...
[OK] Stopped target Network.
[OK] Stopped LSB: Prepare for interface rename.
[OK] Stopped target Basic System.
[OK] Stopped target Slices.
[OK] Removed slice User and Session Slice.
[OK] Stopped target Paths.
[OK] Stopped target Sockets.
[OK] Closed D-Bus System Message Bus Socket.
[OK] Closed RPCbind Server Activation Socket.
[OK] Stopped target System Initialization.
[OK] Stopped target Local Encrypted Volumes.
[OK] Stopped Update is Completed.
Stopping Update is Completed...
[OK] Stopped Rebuild Hardware Database.
Stopping Rebuild Hardware Database...
Stopping Update UTMP about System Boot/Shutdown...
Stopping Load/Save Random Seed...
[OK] Stopped Apply Kernel Variables.
Stopping Apply Kernel Variables...
[OK] Stopped Load Kernel Modules.
Stopping Load Kernel Modules...
[OK] Stopped Setup Virtual Console.
Stopping Setup Virtual Console...
[OK] Stopped Update UTMP about System Boot/Shutdown.
[OK] Stopped Load/Save Random Seed.
[OK] Stopped Create Volatile Files and Directories.
Stopping Create Volatile Files and Directories...
[OK] Stopped target Local File Systems.
Unmounting Mount /proc/xen files...
Unmounting /run/user/0...
[OK] Unmounted Mount /proc/xen files.
[OK] Unmounted /run/user/0.
[OK] Reached target Unmount All Filesystems.
[OK] Reached target Unmount All Filesystems.
[OK] Stopped target Swap.


chandana - VMware Workstation 17 Player
Player
[0.067398] efi: EFI_MEMMAP is not enabled.
[FAILED] Failed to start Load Kernel Modules.
See 'systemctl status systemd-modules-load.service' for details.
Starting Apply Kernel Variables...
Starting Create Static Device Nodes in /dev...
[OK] Started Apply Kernel Variables.
[OK] Started Create Static Device Nodes in /dev.
[OK] Started Journal Service.
[OK] Started dracut cmdline hook.
Starting dracut pre-udev hook...
[OK] Started dracut pre-udev hook.
Starting udev Kernel Device Manager...
[OK] Started udev Kernel Device Manager.
Starting udev Coldplug all Devices...
Mounting Configuration File System...
[OK] Mounted Configuration File System.
[OK] Started udev Coldplug all Devices.
Starting dracut initqueue hook...
Starting Show Plymouth Boot Screen...
[OK] Reached target System Initialization.


chandana - VMware Workstation 17 Player
Player
XenServer 8
15:14:14
xenserver-medz.jhah
Configuration
Customize System
Status Display
Network and Management Interface
Authentication
Virtual Machines
Disks and Storage Repositories
Resource Pool Configuration
Hardware and BIOS Information
Keyboard and Timezone
Remote Service Configuration
Backup, Restore and Update
Technical Support
Reboot or Shutdown
Local Command Shell
<Enter> OK <Up/Down> Select
VMware, Inc.
VMware20,1
XenServer 8
Management Network Parameters
Device eth0
IP address 192.168.198.128
Netmask 255.255.255.0
Gateway 192.168.198.2
Press <Enter> to display the SSL key fingerprints for this host
<Enter> Fingerprints <F5> Refresh


XenServer 8
15:14:23
xenserver-medzjhah
Configuration
Customize System
Status Display
Network and Management Interface
Authentication
Virtual Machines
Disks and Storage Repositories
Resource Pool Configuration
Hardware and BIOS Information
Keyboard and Timezone
Remote Service Configuration
Backup, Restore and Update
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VMware, Inc.
VMware20,1
XenServer 8
Management Network Parameters
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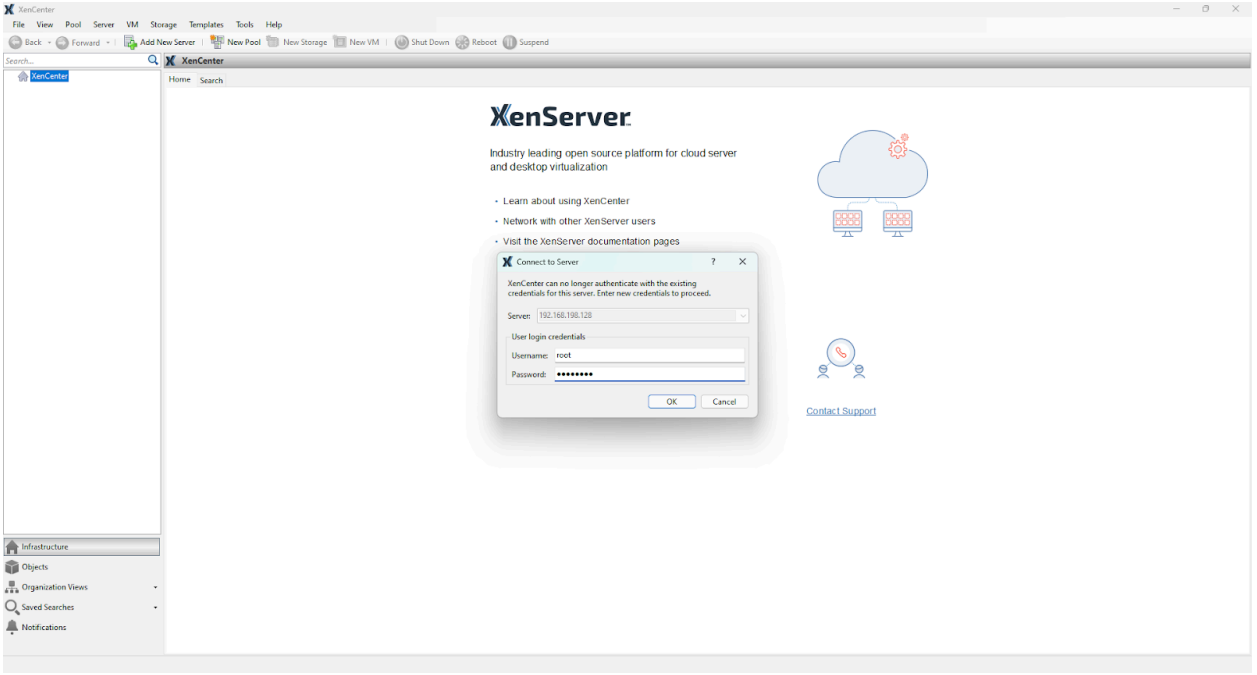
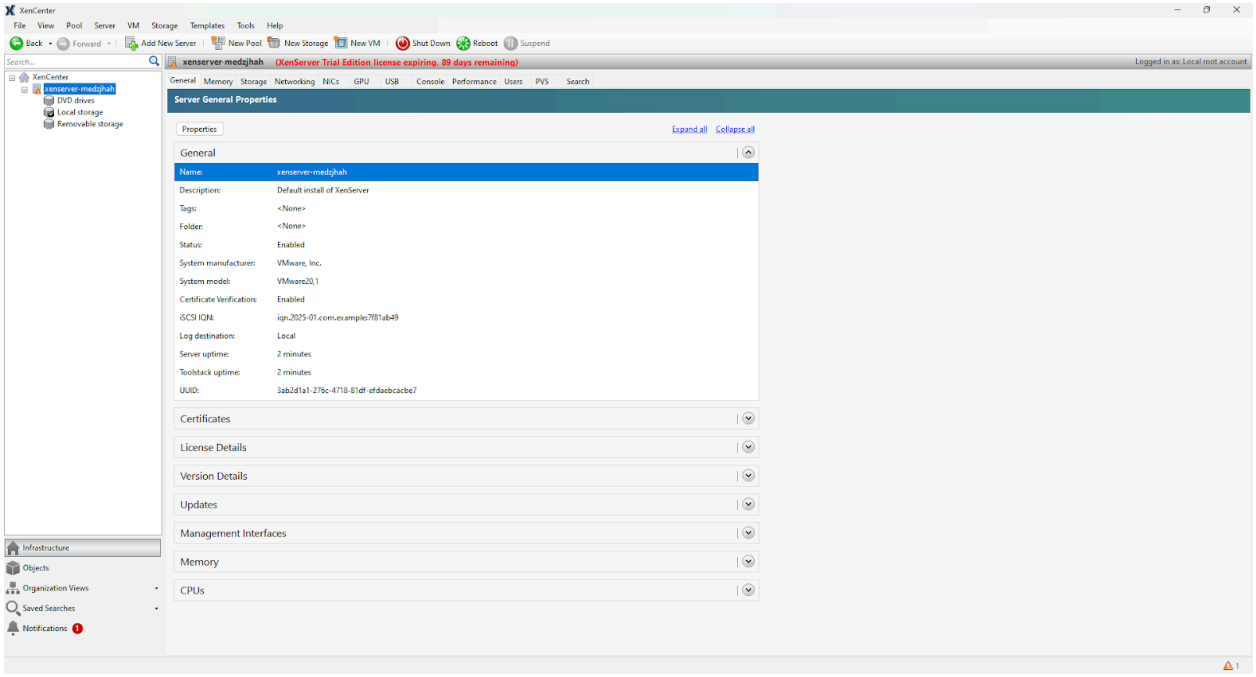
Press <Enter> to display the SSL key fingerprints for this host
<Enter> OK <Up/Down> Select
<Enter> Fingerprints <F5> Refresh


XenCenter
XenServer
Industry leading open source platform for cloud server and desktop virtualization
Learn about using XenCenter
Network with other XenServer users
Visit the XenServer documentation pages
Connect to Server
XenCenter can no longer authenticate with the existing credentials for this server. Enter new credentials to proceed.
Server: 192.168.198.128
User login credentials
Username: root
Password:
OK
Cancel
Contact Support



Questions:

1) On a particular server, within each virtual machine:
   a) You can run any version of Windows without regard for the version(s) running in the other virtual machines.
   b) The versions of Windows must be no more than one release level apart
   c) The versions of Windows must be exactly the same.

   Ans: You can run any version of Windows without regard for the version(s) running in the other virtual machines.

2) On a particular server:
   a) If you need to reboot one virtual machine, you have to first reboot the physical server, the individual virtual machines and then reboot automatically when the physical-machine reboot is finished.
   b) If you reboot one virtual machine, all the other virtual machines reboot at the same time.
   c) You can reboot a virtual machine without it having any effect on the other virtual machines.

   Ans: You can run any version of Windows without regard for the version(s) running in the other virtual machines.

3) When choosing which applications or databases to place on one physical machine (using a virtual machine for each application), it is best to:
   a) Choose a mixture of applications and databases with different workloads.
   b) Keep all the heavy-workload applications/databases together and all the light-workload applications and databases together.

Ans: Choose a mixture of applications and databases with different workloads.

4) Introduction of server virtualization in a data center:
    a) Will make the introduction of Storage –Area Network (SAN) absolutely necessary.
    b) Will make the introduction of Storage –Area Network (SAN) desirable.
    c) Will not materially change storage requirements.

Ans: Will make the introduction of Storage –Area Network (SAN) desirable.

5) In a virtualized- server environment, compared with a traditional server environment:
    a) It is easier to keep track of software licensing.
    b) Tracking software licensing is neither materially easier or harder.
    c) It is significantly harder to keep track of software licensing.

Ans: Tracking software licensing is neither materially easier or harder.

6) The VM Kernel can't boot it by itself, so it takes the help of the 3rd party operating system.
    a) True
    b) False

Ans: False

7) The hypervisor acts like a traffic cop, directing hardware access and coordinating requests from the guest operating systems.
    a) True
    b) False

Ans: True

8) XEN hypervisor does not support VM migration.
    a) True
    b) False

Ans: False

9) XEN hypervisor works on multiple cloud platforms.
    a) True
    b) False

Ans: True

Outcomes: CO1 – Understand Virtualization.

Conclusion: (Conclusion to be based on the objectives and outcomes achieved)
Through this experiment, the objectives of understanding virtualization and its implementation using VMware Workstation and Xen hypervisor were achieved. The concept of virtualization was demonstrated by successfully installing and running multiple virtual machines on a single physical host, showcasing the benefits such as resource optimization, reduced operational costs, and ease of management. Additionally, the understanding of Xen architecture, including domain management and virtualization types (paravirtualization and full virtualization), was deepened. This practical exercise provided hands-on experience in setting up a virtualized environment, fulfilling the learning outcomes effectively.

Grade: AA / AB / BB / BC / CC / CD / DD

Signature of faculty in-charge with date

References:
Websites:

1) http://www.vmware.com/in
2) http://www.xenproject.org