

## Practical 1

a) A Client server based program using TCP to find if the number entered is prime.

### **tcpClientPrime.java**

```
import java.net.*;
import java .io.*;
class tcpClientPrime {
    public static void main(String args[]) {
        try
        {
            Socket cs = new Socket("LocalHost",8001);
            BufferedReader infu = new BufferedReader(new InputStreamReader(System.in));
            System.out.println("Enter a number : ");
            int a = Integer.parseInt(infu.readLine());
            DataOutputStream out = new DataOutputStream(cs.getOutputStream());
            out.writeInt(a);
            DataInputStream in = new DataInputStream(cs.getInputStream());
            System.out.println(in.readUTF());
            cs.close();
        }
        catch(Exception e)
        {
            System.out.println(e.toString());
        }
    }
}
```

### **tcpServerPrime.java**

```
import java.net.*;
import java .io.*;
class tcpServerPrime
{
    public static void main(String args[])
    {
        try
        {
            ServerSocket ss = new ServerSocket(8001);
            System.out.println("Server Started.....");
            Socket s = ss.accept();
```

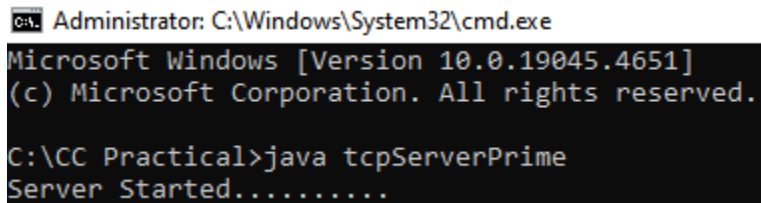
```

        DataInputStream in = new DataInputStream(s.getInputStream());
        int x = in.readInt();
        DataOutputStream otc = new DataOutputStream(s.getOutputStream());
        int y = x/2;
        if(x == 1 || x==2 || x==3)
        {
            otc.writeUTF(x+"isPrime");
            System.exit(0);
        }
        for(int i =2; i<=y; i++)
        {
            if(x % i != 0)
            {
                otc.writeUTF(x+"is Prime");
            }
            Else
            {
                otc.writeUTF(x+"is not Prime");
            }
        }
    }
}
catch(Exception e)
{
    System.out.println(e.toString());
}
}
}

```

**Output:-**

**Server side:-**



C:\> Administrator: C:\Windows\System32\cmd.exe  
 Microsoft Windows [Version 10.0.19045.4651]  
 (c) Microsoft Corporation. All rights reserved.  
 C:\CC Practical>java tcpServerPrime  
 Server Started.....

### Client side:-

```
Administrator: C:\Windows\System32\cmd.exe
C:\CC Practical>javac tcpClientPrime.java

C:\CC Practical>java tcpClientPrime
Enter a number :
4
4is not Prime

C:\CC Practical>
```

```
Administrator: C:\Windows\System32\cmd.exe

C:\CC Practical>java tcpClientPrime
Enter a number :
3
3isPrime
```

### b) A client server tcp based chatting application.

#### ChatClient.java

```
import java.net.*;
import java.io.*;
class ChatClient
{
    public static void main(String args[])
    {
        try
        {
            Socket s = new Socket("Localhost", 8000);
            BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
            DataOutputStream out = new DataOutputStream(s.getOutputStream());
            DataInputStream in = new DataInputStream(s.getInputStream());
            String msg;
            System.out.println("To stop chatting with server type STOP");
            System.out.println("Client says: ");
            while((msg = br.readLine()) != null)
            {
                out.writeBytes(msg + "\n");
                if(msg.equals("STOP"))
                    break;
                System.out.println("Server Says: " + in.readLine());
                System.out.print("Client Says : ");
            }
        }
    }
}
```

```
br.close();
in.close();
out.close();
s.close();
s.close();
}
catch(Exception e)
{
e.printStackTrace();
}
}
}
```

### **ChatServer.java**

```
import java.net.*;
import java.io.*;
class ChatServer
{
public static void main(String args[])
{
try
{
ServerSocket ss = new ServerSocket(8000); System.out.println("Waiting for Client to connect..");

Socket s = ss.accept();
BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
DataOutputStream out = new DataOutputStream(s.getOutputStream());
DataInputStream in = new DataInputStream(s.getInputStream());
String receive, send;

while((receive = in.readLine()) != null)
{
if(receive.equals("STOP"))
break;
System.out.println("Client Says: "+receive);
System.out.println("Server Says: ");
send = br.readLine();
out.writeBytes(send+"\n");
}
br.close();
```

```
in.close();
out.close();
s.close();
s.close();
}
catch(Exception e)
{
e.printStackTrace();
}
}
}
```

## Output:-

### Server side

```
C:\. Administrator: C:\Windows\System32\cmd.exe - java ChatServer
Microsoft Windows [Version 10.0.19045.4651]
(c) Microsoft Corporation. All rights reserved.

C:\CC PRactical>java ChatServer
Waiting for Client to connect..
Client Says: hii
Server Says:
hii
```

### Client side

```
C:\. Administrator: C:\Windows\System32\cmd.exe - java ChatClient
Microsoft Windows [Version 10.0.19045.4651]
(c) Microsoft Corporation. All rights reserved.

C:\CC PRactical>java ChatClient
To stop chatting with server type STOP
Client says:
hii
Server Says: hii
Client Says :
```

## Practical 2

- a) **Write a program for implementing Client Server communication model using UDP. Program which finds entered number is even or odd**

### **udpClientEO.java**

```
import java.io.*;
import java.net.*;
public class udpClientEO
{
    public static void main(String args[])
    {
        try
        {
            DatagramSocket ds = new DatagramSocket(1000);
            BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
            System.out.println("Enter a number : ");
            String num = br.readLine();
            byte b[] = new byte[1024];
            b = num.getBytes();
            DatagramPacket dp = new DatagramPacket(b, b.length, InetAddress.getLocalHost(), 2000);
            ds.send(dp);
            byte b1[] = new byte[1024];
            DatagramPacket dp1 = new DatagramPacket(b1, b1.length);
            ds.receive(dp1);
            String str = new String(dp1.getData(), 0, dp1.getLength());
            System.out.println(str);
        }
        catch(Exception e)
        {
            e.printStackTrace();
        }
    }
}
```

### **udpServerEO.java**

```
import java.io.*;
import java.net.*;
public class udpServerEO
{
    public static void main(String args[])
    {
        try
        {
```


```

DatagramSocket ds = new DatagramSocket(2000);
byte b[] = new byte[1024]; // 1 mb of variable storage
DatagramPacket dp = new DatagramPacket(b, b.length);
ds.receive(dp);
String str = new String(dp.getData(), 0, dp.getLength());
System.out.println(str);
int a = Integer.parseInt(str);
String s = new String();
if (a % 2 == 0)
    s = "Number is even";
else
    s = "Number is odd";
byte b1[] = new byte[1024];
b1 = s.getBytes();
DatagramPacket dp1 = new DatagramPacket(b1, b1.length, InetAddress.getLocalHost(),
1000);
ds.send(dp1);
}
catch(Exception e)
{
    e.printStackTrace();
}
}
}

```

## Output :

### serverside

 Administrator: C:\Windows\System32\cmd.exe

```

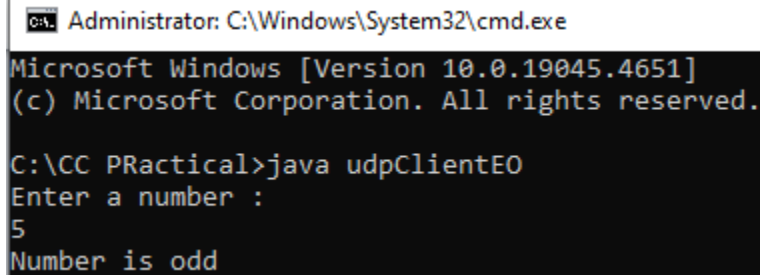
Microsoft Windows [Version 10.0.19045.4651]
(c) Microsoft Corporation. All rights reserved.

C:\CC PRactical>javac udpServerEO.java

C:\CC PRactical>java udpServerEO
5

```

## Client side



```
Administrator: C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19045.4651]
(c) Microsoft Corporation. All rights reserved.

C:\CC PRactical>java udpClientE0
Enter a number :
5
Number is odd
```

- b) Write a Program for implementing Client Server communication model using UDP. A program to implement simple calculator operations like addition, subtraction, multiplication and division.

Code :

### RPCServer.java

```
import java.util.*;
import java.net.*;
class RPCServer
{
    DatagramSocket ds;
    DatagramPacket dp;
    String str, methodName, result;
    int val1, val2;
    RPCServer()
    {
        try
        {
            ds = new DatagramSocket(1200);
            byte b[] = new byte[4096];
            while(true)
            {
                dp = new DatagramPacket(b, b.length);
                ds.receive(dp);
                str = new String(dp.getData(), 0, dp.getLength());
                if(str.equalsIgnoreCase("q"))
                {
                    System.exit(1);
                }
                else
                {

```



```

StringTokenizer st = new StringTokenizer(str, " "); int i=0;
while(st.hasMoreTokens())
{
    String token=st.nextToken();
    methodName = token;
    val1 = Integer.parseInt(st.nextToken()); val2 = Integer.parseInt(st.nextToken()); }
}
System.out.println(str);
InetAddress ia = InetAddress.getLocalHost();
if(methodName.equalsIgnoreCase("add")) {
    result= "" + add(val1,val2);
}
else if(methodName.equalsIgnoreCase("sub"))
{
    result= "" + sub(val1,val2);
}
else if(methodName.equalsIgnoreCase("mul"))
{
    result= "" + mul(val1,val2);
}
else if(methodName.equalsIgnoreCase("div"))
{
    result= "" + div(val1,val2);
}
byte b1[]=result.getBytes();
DatagramSocket ds1 = new DatagramSocket();
DatagramPacket dp1 = new DatagramPacket(b1,b1.length,InetAddress.getLocalHost(),
1300);
System.out.println("result : "+result+"\n");
ds1.send(dp1);
}
}
catch (Exception e)
{
    e.printStackTrace();
}
}
public int add(int val1, int val2) {
    return val1+val2;
}
}

```

```

public int sub(int val3, int val4) {
    return val3-val4;
}
public int mul(int val3, int val4) {
    return val3*val4;
}
public int div(int val3, int val4) {
    return val3/val4;
}
public static void main(String[] args) {
    new RPCServer();
}
}

```

### **RPCClient.java**

```

import java.io.*;
import java.net.*;
class RPCClient
{
    RPCClient()
    {
        try
        {
            InetAddress ia = InetAddress.getLocalHost();
            DatagramSocket ds = new DatagramSocket();
            DatagramSocket ds1 = new DatagramSocket(1300);
            System.out.println("\nRPC Client\n");
            System.out.println("Enter method name and parameter like add 3 4\n");
            while (true)
            {
                BufferedReader br = new BufferedReader(new InputStreamReader(System.in)); String
                str = br.readLine();
                byte b[] = str.getBytes();
                DatagramPacket dp = new DatagramPacket(b,b.length,ia,1200);
                ds.send(dp);
                dp = new DatagramPacket(b,b.length); ds1.receive(dp);
                String s = new String(dp.getData(),0,dp.getLength());
                System.out.println("\nResult = " + s + "\n"); }
            }
        catch (Exception e)

```

```

    {
    e.printStackTrace();
    }
    }
    public static void main(String[] args)
    {
    newRPCClient();
    }
    }

```

## Output

### Server side

```

Administrator: C:\Windows\System32\cmd.exe - java RPCServer
Microsoft Windows [Version 10.0.19045.4651]
(c) Microsoft Corporation. All rights reserved.

C:\CC PRactical>java RPCServer
add 5 6
result : 11

sub 5 1
result : 4

mul 4 2
result : 8

div 4 2
result : 2

```

### Client side

```

Administrator: C:\Windows\System32\cmd.exe - java RPCClient
Microsoft Windows [Version 10.0.19045.4651]
(c) Microsoft Corporation. All rights reserved.

C:\CC PRactical>java RPCClient

RPC Client

Enter method name and parameter like add 3 4

add 5 6

Result = 11

sub 5 1

Result = 4

mul 4 2

Result = 8

div 4 2

Result = 2

```

## Practical 3

### Multicast Socket

#### Code:-

#### BroadcastServer.java

```
import java.net.*;
import java.net.*;
import java.io.*;
import java.util.*;
public class BroadcastServer
{
    public static final int PORT = 1234;
    public static void main(String args[])throws Exception
    {
        MulticastSocket socket;
        DatagramPacket packet;
        InetAddress address;
        address = InetAddress.getByName("239.1.2.3");
        socket = new MulticastSocket();
        socket.joinGroup(address);
        byte[]data = null;
        for(;;)
        {
            Thread.sleep(10000);
            System.out.println("sending");
            String str = ("This is Manjunath Calling...");
            data = str.getBytes();
            packet = new DatagramPacket(data,str.length(),address,PORT);
            socket.send(packet);
        }
    }
}
```

#### BroadcastClient.java

```
import java.net.*;
import java.io.*;
public class BroadcastClient
{
    public static final int PORT = 1234;
    public static void main(String args[])throws Exception
```

```
{
MulticastSocket socket;
DatagramPacket packet;
InetAddress address;
address = InetAddress.getByName("239.1.2.3");
socket = new MulticastSocket(PORT);
socket.joinGroup(address);
byte[] data = new byte[100];
packet = new DatagramPacket(data,data.length);
for(;;)
{
socket.receive(packet);
String str = new String(packet.getData());
System.out.println("Message received "+packet.getAddress()+"Message is:"+str);
}
}
}
```

### Output:-

## Server side

[illegible]

## Client side

```
Administrator: C:\Windows\System32\cmd.exe - java BroadcastClient
Microsoft Windows [Version 10.0.19045.4651]
(c) Microsoft Corporation. All rights reserved.

C:\CC PRactical>java BroadcastClient
Message received /172.30.31.71Message is:This is Ratnesh Calling....
Message received /172.30.31.54Message is:This is Pooja Callingng....
Message received /172.30.31.67Message is:This is Tirth Calling.....
Message received /172.30.31.63Message is:This is Manjunath Calling...
Message received /172.30.31.75Message is:This is Mahesh Calling.....
Message received /172.30.31.50Message is:This is Binal Calling.....
Message received /172.30.31.71Message is:This is Ratnesh Calling.....
Message received /172.30.31.54Message is:This is Pooja Callingng.....
Message received /172.30.31.67Message is:This is Tirth Calling.....
```

## Practical 4

**Aim:- RMI based application program to display current date and time.**

**Code:**

### **ServerDate.java**

```
import java.rmi.*;
import java.rmi.server.*;
import java.util.*;
public class ServerDate extends UnicastRemoteObject implements InterDate {
    public ServerDate() throws Exception
    {
    }
    public String display() throws Exception
    {
        String str = "";
        Date d = new Date();
        str = d.toString();
        return str;
    }
    public static void main(String args[]) throws Exception
    {
        ServerDate s1 = new ServerDate();
        Naming.bind("DS", s1);
        System.out.println("Object registered.....");
    }
}
```

### **ClientDate.java**

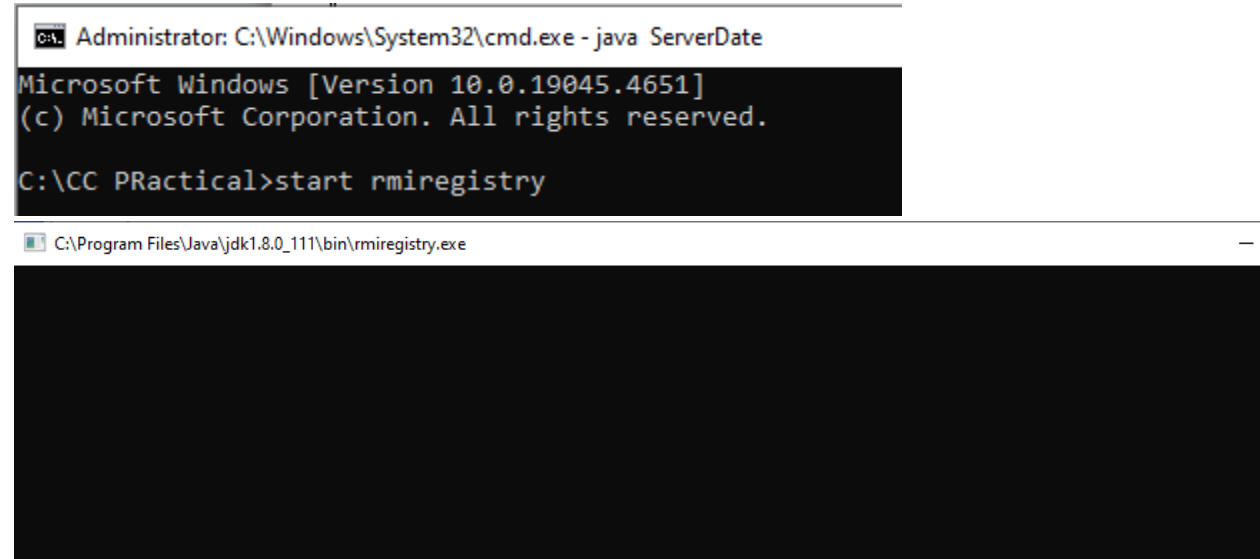
```
import java.rmi.*;
import java.io.*;
public class ClientDate
{
    public static void main(String args[]) throws Exception {
        String s1;
        InterDate h1 = (InterDate) Naming.lookup("DS"); s1 = h1.display();
        System.out.println(s1);
    }
}
```

## InterDate.java

```
import java.rmi.*;  
public interface InterDate extends Remote {  
    public String display() throws Exception; }  
}
```

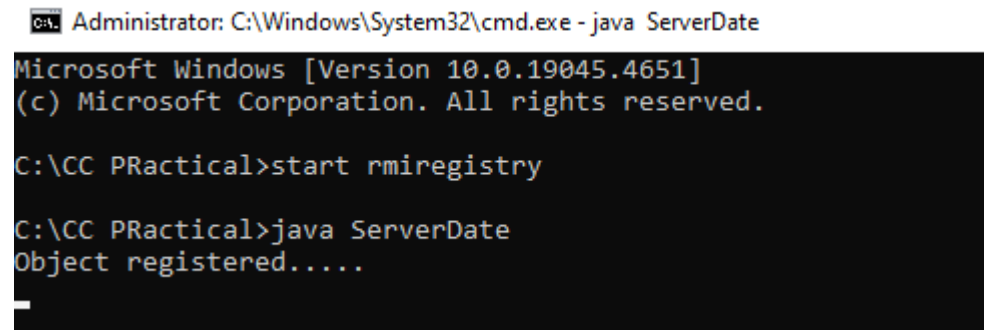
## output:

### startrmiregistry



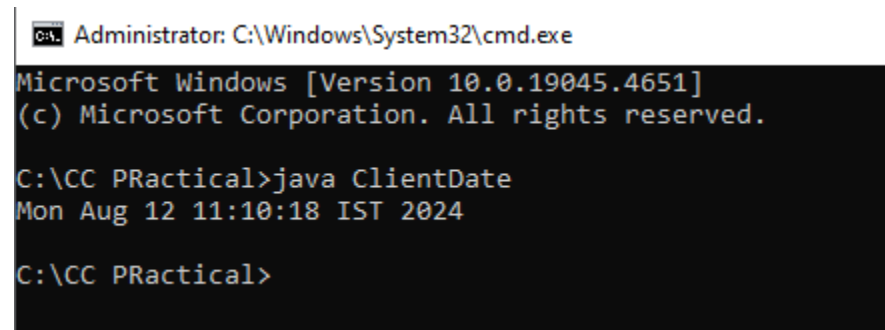
The screenshot shows a Windows command prompt window titled "Administrator: C:\Windows\System32\cmd.exe - java ServerDate". The window displays the following text: "Microsoft Windows [Version 10.0.19045.4651] (c) Microsoft Corporation. All rights reserved. C:\CC PRactical>start rmiregistry". Below this, a new window titled "C:\Program Files\Java\jdk1.8.0\_111\bin\rmiregistry.exe" is shown, which is currently empty.

### Server side



The screenshot shows a Windows command prompt window titled "Administrator: C:\Windows\System32\cmd.exe - java ServerDate". The window displays the following text: "Microsoft Windows [Version 10.0.19045.4651] (c) Microsoft Corporation. All rights reserved. C:\CC PRactical>start rmiregistry C:\CC PRactical>java ServerDate Object registered.....".

### client side



The screenshot shows a Windows command prompt window titled "Administrator: C:\Windows\System32\cmd.exe". The window displays the following text: "Microsoft Windows [Version 10.0.19045.4651] (c) Microsoft Corporation. All rights reserved. C:\CC PRactical>java ClientDate Mon Aug 12 11:10:18 IST 2024 C:\CC PRactical>".

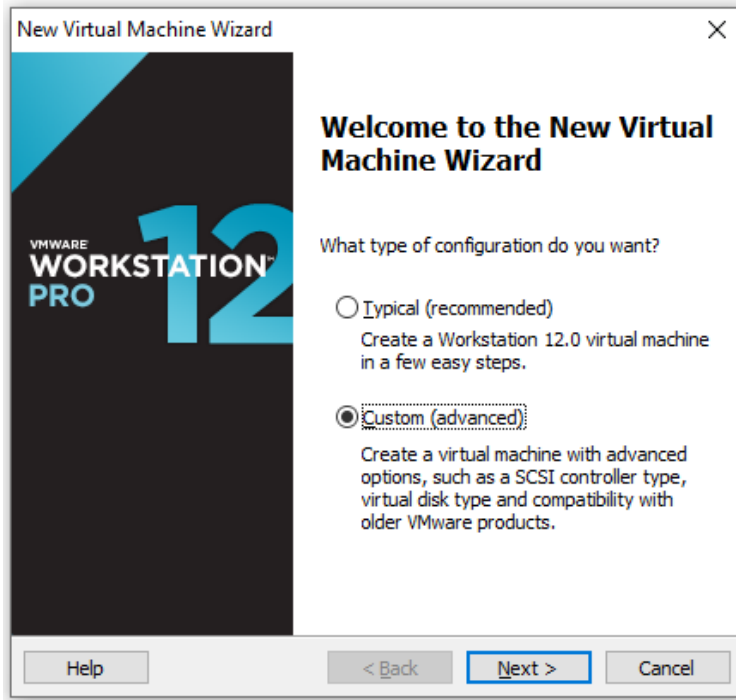


## Practical 5

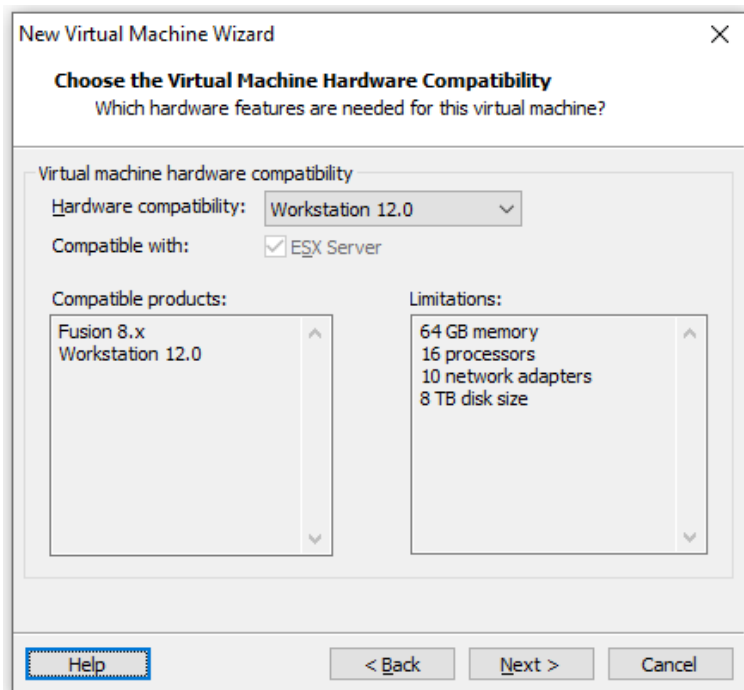
**Aim:**

**Steps:**

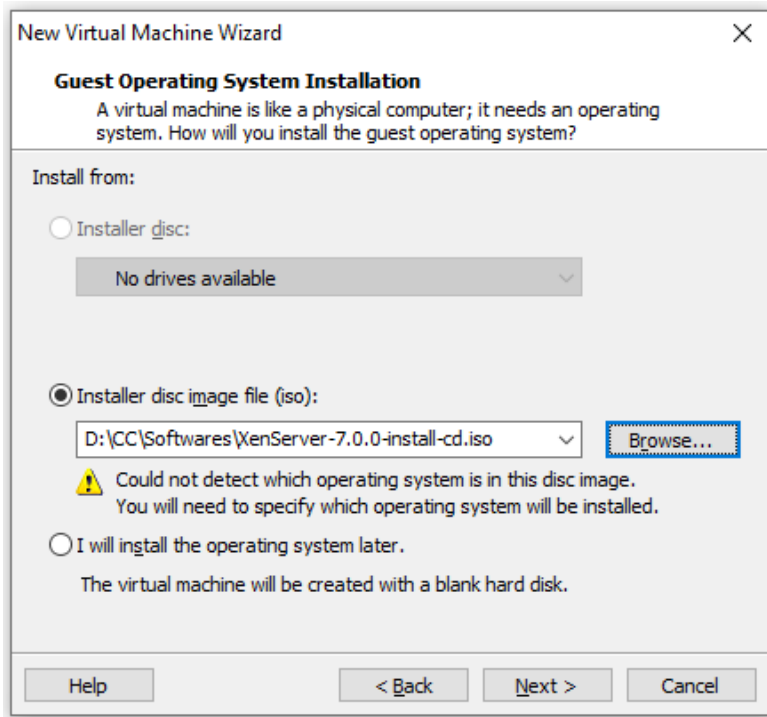
**Click on new Virtual machine and then click on next button.**



**Click on the next.**



Select the disc image file and click on the next button.




New Virtual Machine Wizard

**Guest Operating System Installation**  
A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?

Install from:

☐ Installer disc:  
No drives available

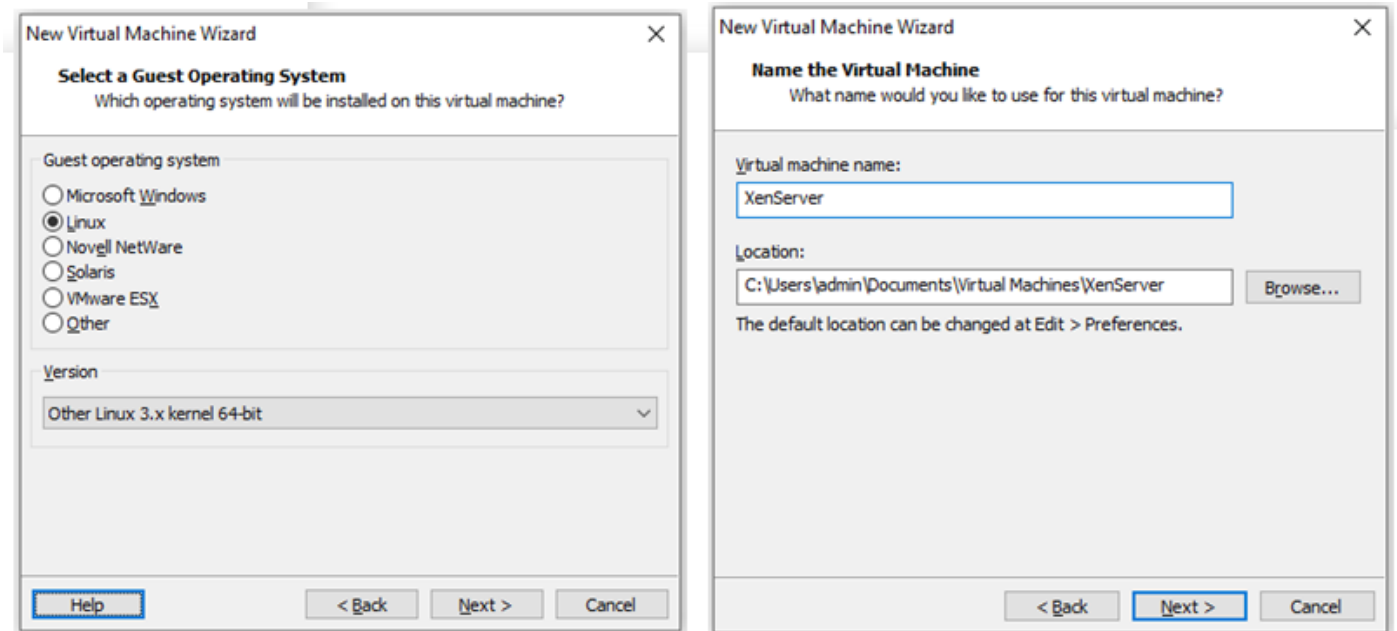
☒ Installer disc image file (iso):  
D:\CC\Softwares\XenServer-7.0.0-install-cd.iso **Browse...**

 Could not detect which operating system is in this disc image.  
You will need to specify which operating system will be installed.

☐ I will install the operating system later.  
The virtual machine will be created with a blank hard disk.

Help < Back Next > Cancel

Select the Linux option and click on the next.



New Virtual Machine Wizard

**Select a Guest Operating System**  
Which operating system will be installed on this virtual machine?

Guest operating system

☐ Microsoft Windows  
☒ Linux  
☐ Novell NetWare  
☐ Solaris  
☐ VMware ESX  
☐ Other

Version  
Other Linux 3.x kernel 64-bit

Help < Back Next > Cancel

New Virtual Machine Wizard

**Name the Virtual Machine**  
What name would you like to use for this virtual machine?

Virtual machine name:  
XenServer

Location:  
C:\Users\admin\Documents\Virtual Machines\XenServer **Browse...**

The default location can be changed at Edit > Preferences.

< Back Next > Cancel

New Virtual Machine Wizard

**Name the Virtual Machine**  
What name would you like to use for this virtual machine?

Virtual machine name:

Location:  
 [Browse...](#)

The default location can be changed at Edit > Preferences.

< Back   Next >   Cancel

New Virtual Machine Wizard

**Processor Configuration**  
Specify the number of processors for this virtual machine.

Processors

Number of processors:

Number of cores per processor:

Total processor cores: 4

Help   < Back   [Next >](#)   Cancel

New Virtual Machine Wizard

**Memory for the Virtual Machine**  
How much memory would you like to use for this virtual machine?

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

64 GB  
32 GB  
16 GB  
8 GB  
4 GB  
2 GB  
1 GB  
512 MB  
256 MB  
128 MB  
64 MB  
32 MB  
16 MB  
8 MB  
4 MB

Memory for this virtual machine:  MB

Maximum recommended memory: 6328 MB

Recommended memory: 384 MB

Guest OS recommended minimum: 32 MB

Help   < Back   Next >   Cancel

New Virtual Machine Wizard

**Network Type**  
What type of network do you want to add?

Network connection

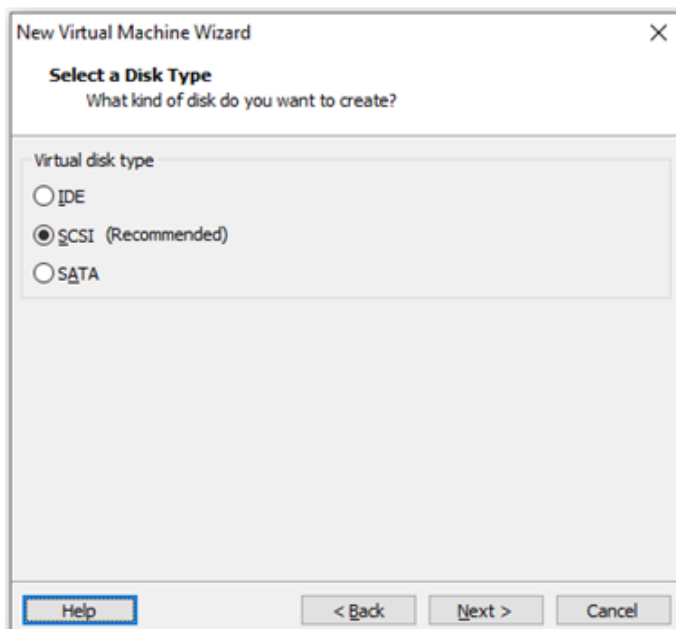
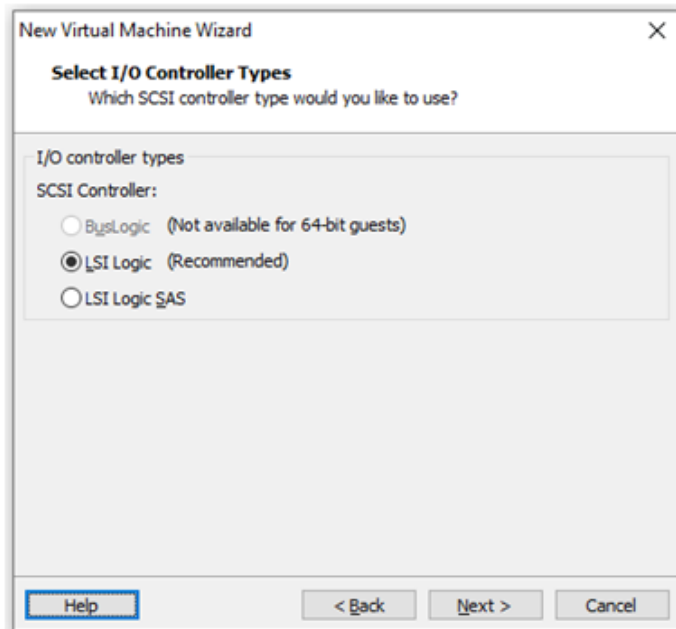
☐ Use bridged networking  
Give the guest operating system direct access to an external Ethernet network. The guest must have its own IP address on the external network.

☒ Use network address translation (NAT)  
Give the guest operating system access to the host computer's dial-up or external Ethernet network connection using the host's IP address.

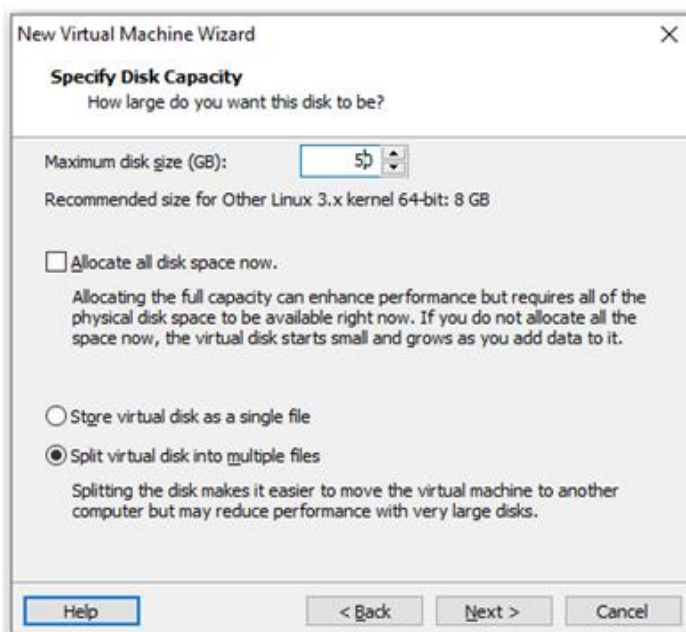
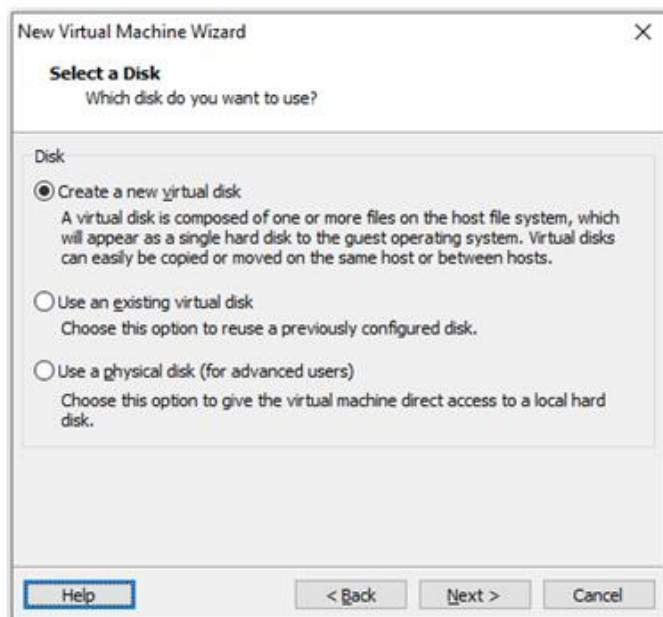
☐ Use host-only networking  
Connect the guest operating system to a private virtual network on the host computer.

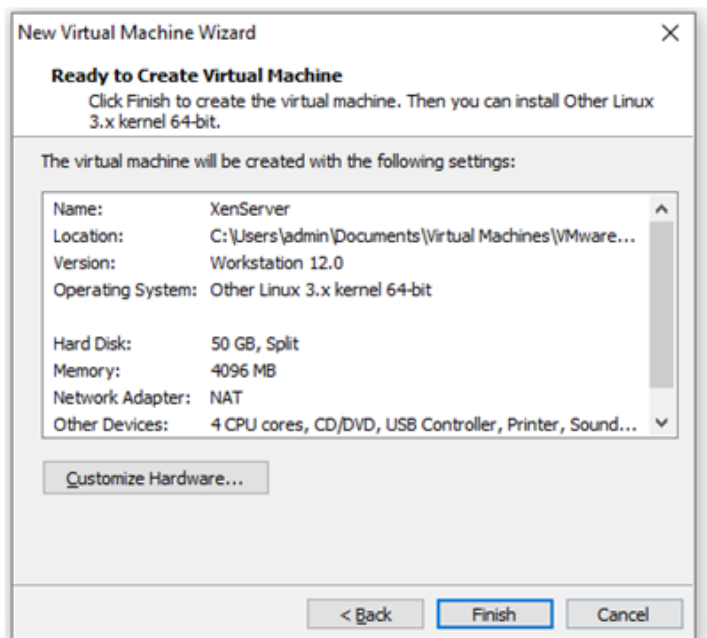
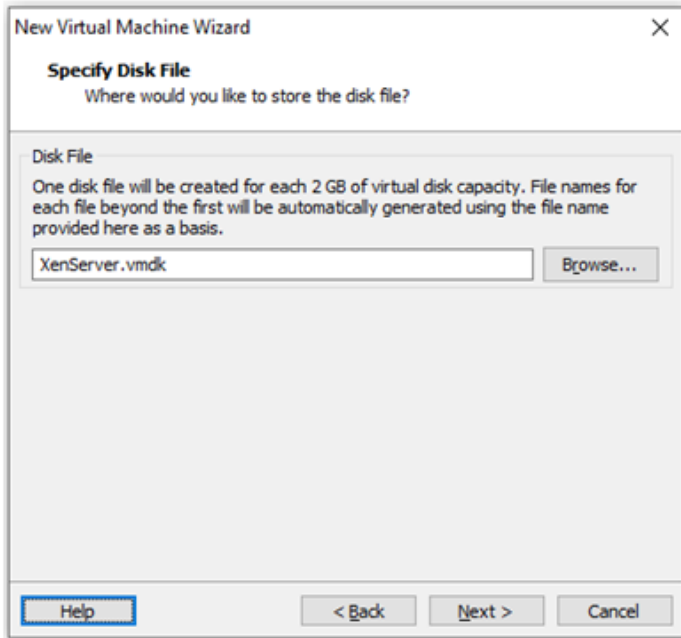
☐ Do not use a network connection

Help   < Back   Next >   Cancel

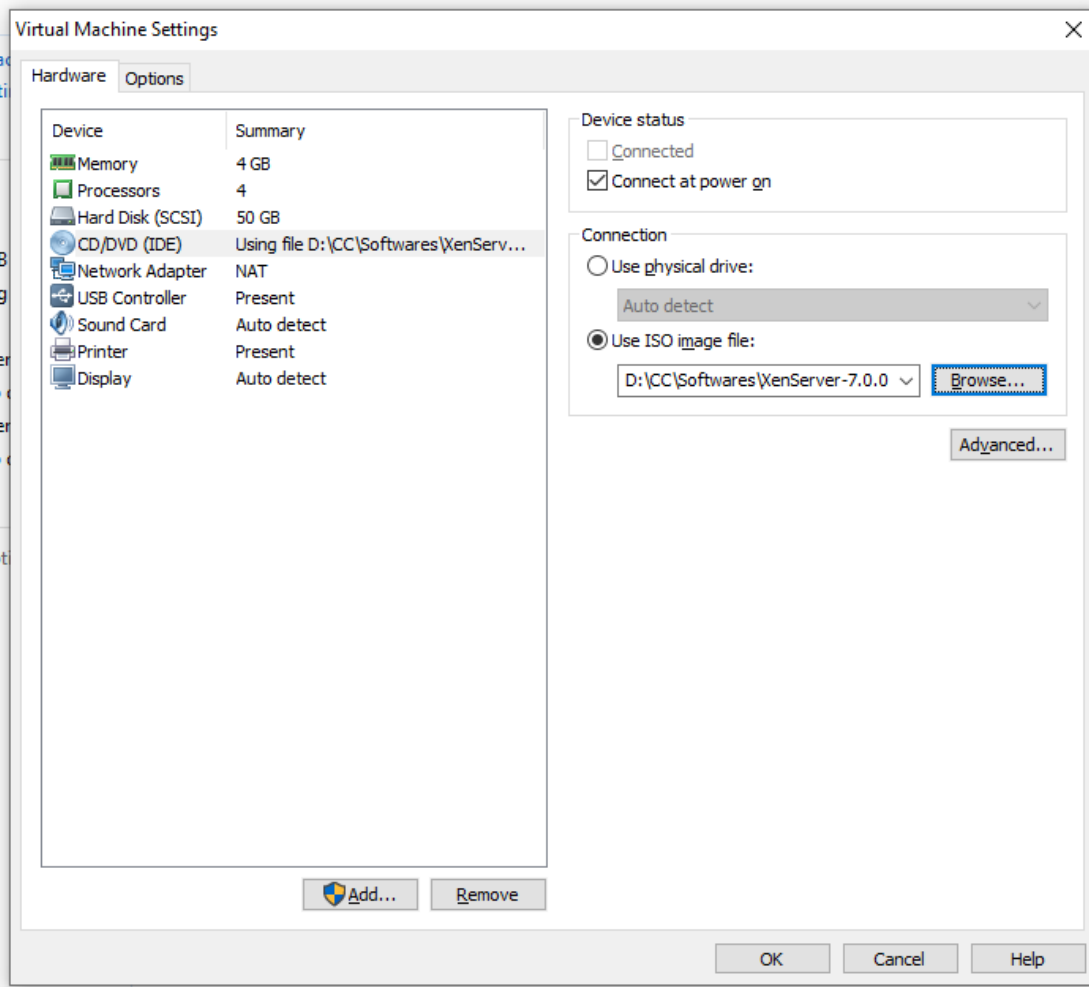


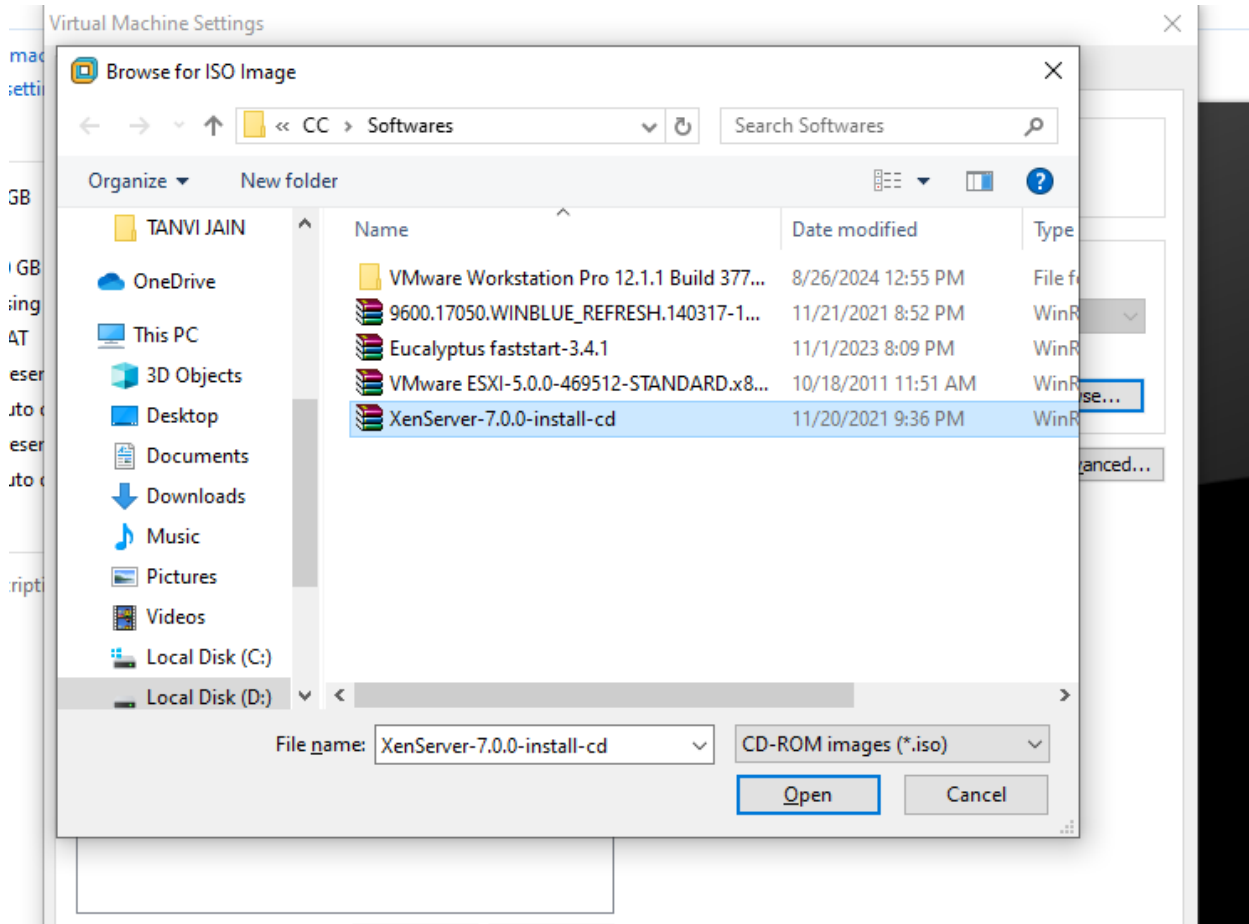
Set the 50GB disk size.





Select the ISO image file.

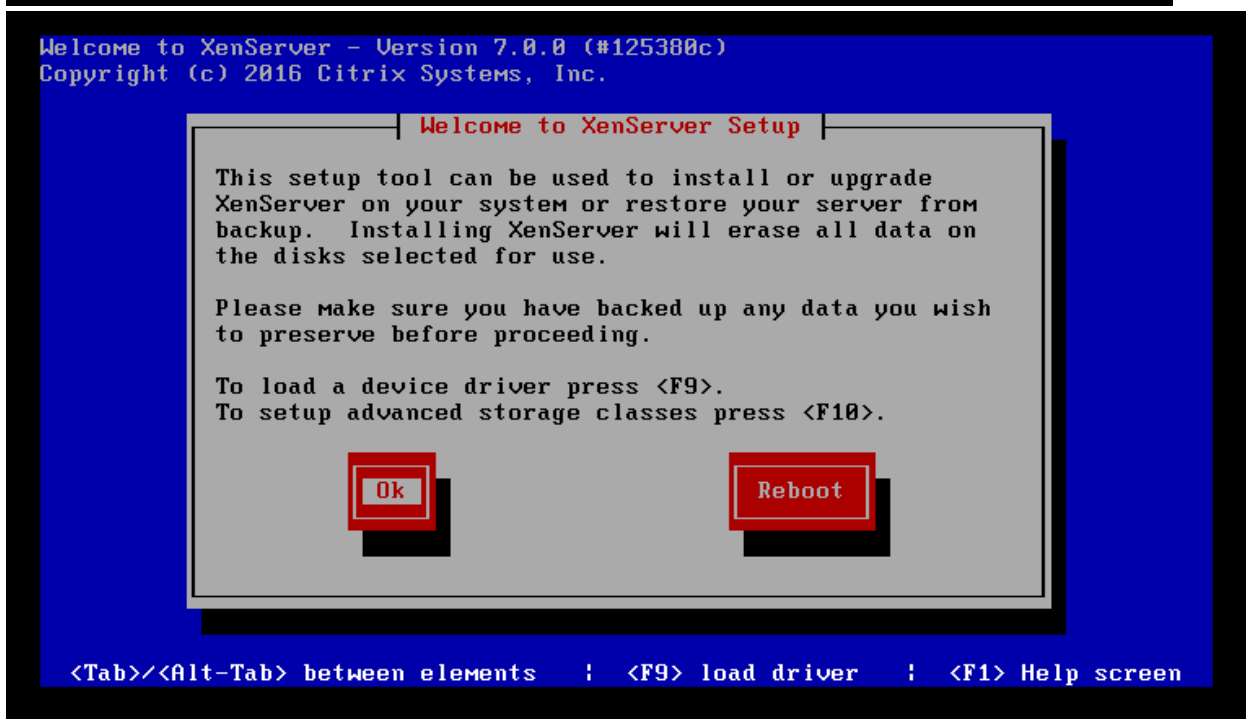
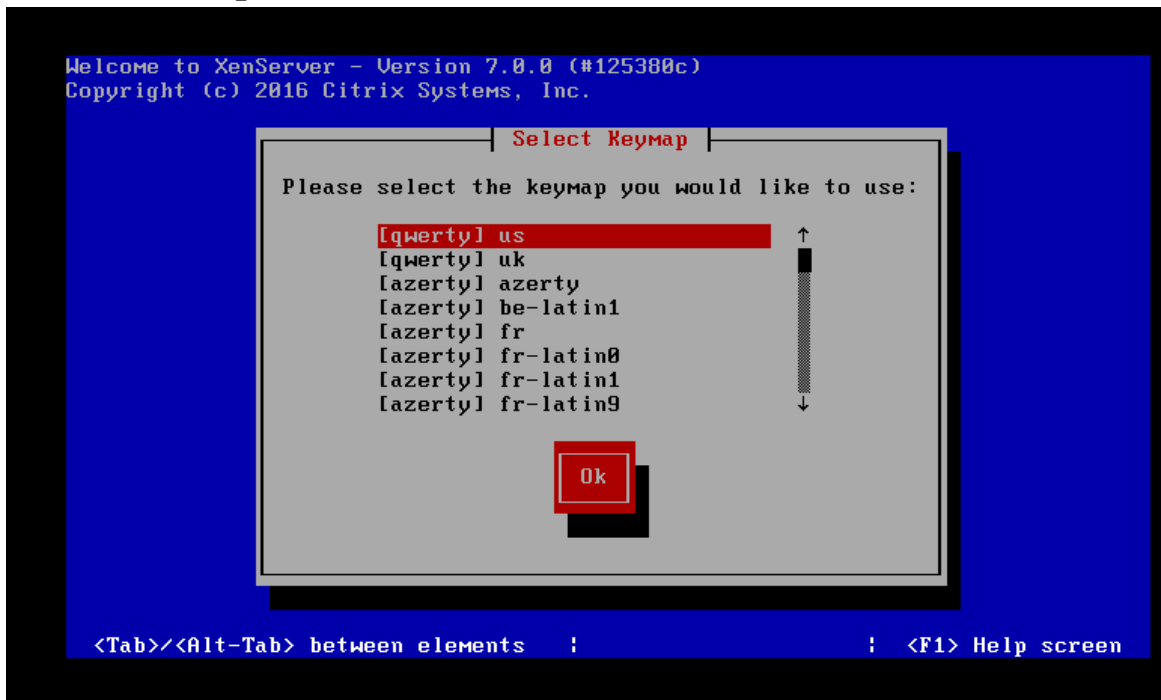




**After selecting the ISO image file power on the virtual machine.**



Click on OK option.



Accept the License Agreement.

Welcome to XenServer - Version 7.0.0 (#125380c)

Copyright (c) 2016 Citrix Systems, Inc. | End User License Agreement |

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Accept EULA

Back

<Tab>/<Alt-Tab> between elements | : | <F1> Help screen

Click on OK.

Welcome to XenServer - Version 7.0.0 (#125380c)

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#### 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 BIOS. 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



Welcome to XenServer - Version 7.0.0 (#125380c)  
Copyright (c) 2016 Citrix Systems, Inc.

### Virtual Machine Storage

Which disks would you like 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 wish to create an advanced configuration after installation.

[\*] sda - 50 GB [VMware, VMware Virtual S]

[ ] Enable thin provisioning (Optimized storage for XenDesktop)

Ok

Back

<Tab>/<Alt-Tab> between elements : <F5> more info : <F1> Help screen

Welcome to XenServer - Version 7.0.0 (#125380c)  
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### Select Installation Source

Please select the type of source you would like to use for this installation

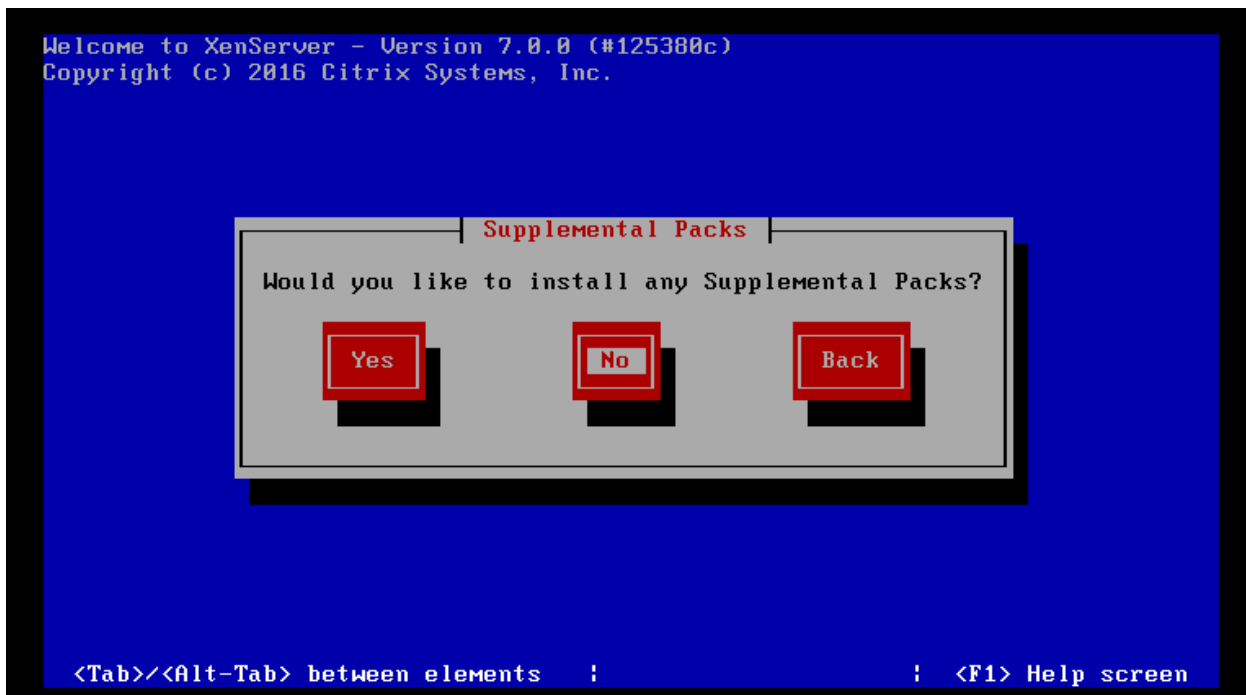
Local media  
HTTP or FTP  
NFS

Ok

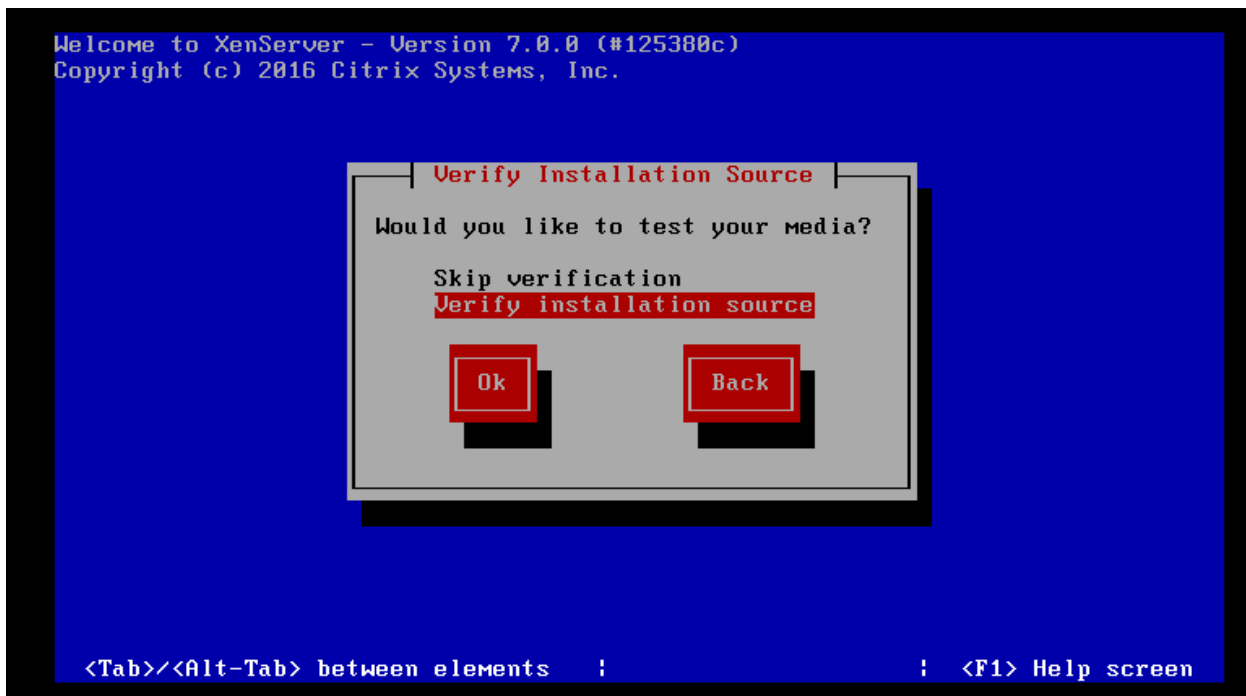
Back

<Tab>/<Alt-Tab> between elements : : <F1> Help screen

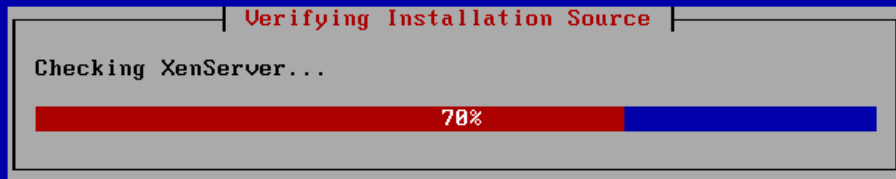
Click on NO.



**Click on OK.**



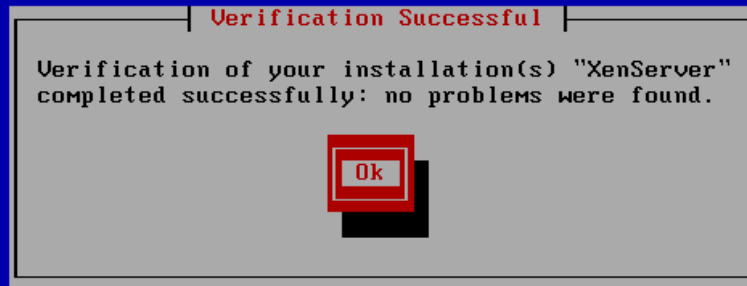
Welcome to XenServer - Version 7.0.0 (#125380c)  
Copyright (c) 2016 Citrix Systems, Inc.



Working: Please wait...

**Click On OK.**

Welcome to XenServer - Version 7.0.0 (#125380c)  
Copyright (c) 2016 Citrix Systems, Inc.



ESXi 5 (4)\VMware

<Tab>/<Alt-Tab> between elements :

! <F1> Help screen

**Now set the Password and click on OK.**

Welcome to XenServer - Version 7.0.0 (#125380c)  
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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

Click on OK.

Welcome to XenServer - Version 7.0.0 (#125380c)  
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Networking

Please specify how networking should be configured for the management interface on this host.

☒ Automatic configuration (DHCP)

☐ Static configuration:

IP Address:

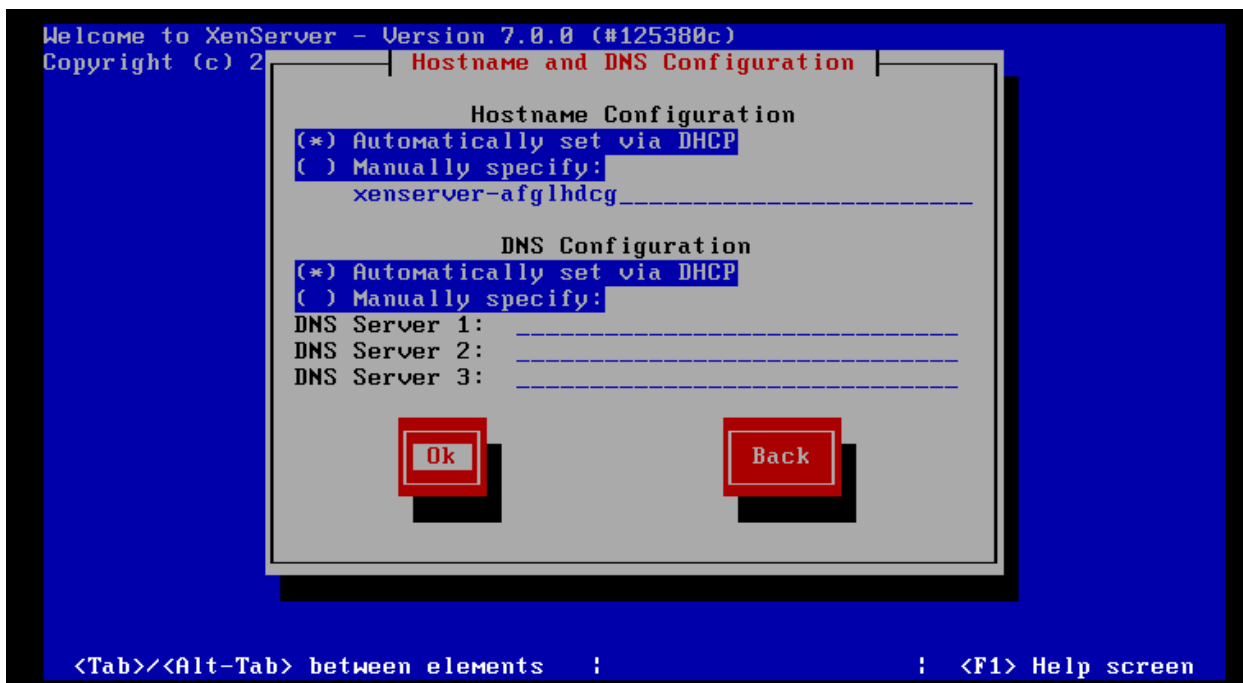
Subnet mask:

Gateway:

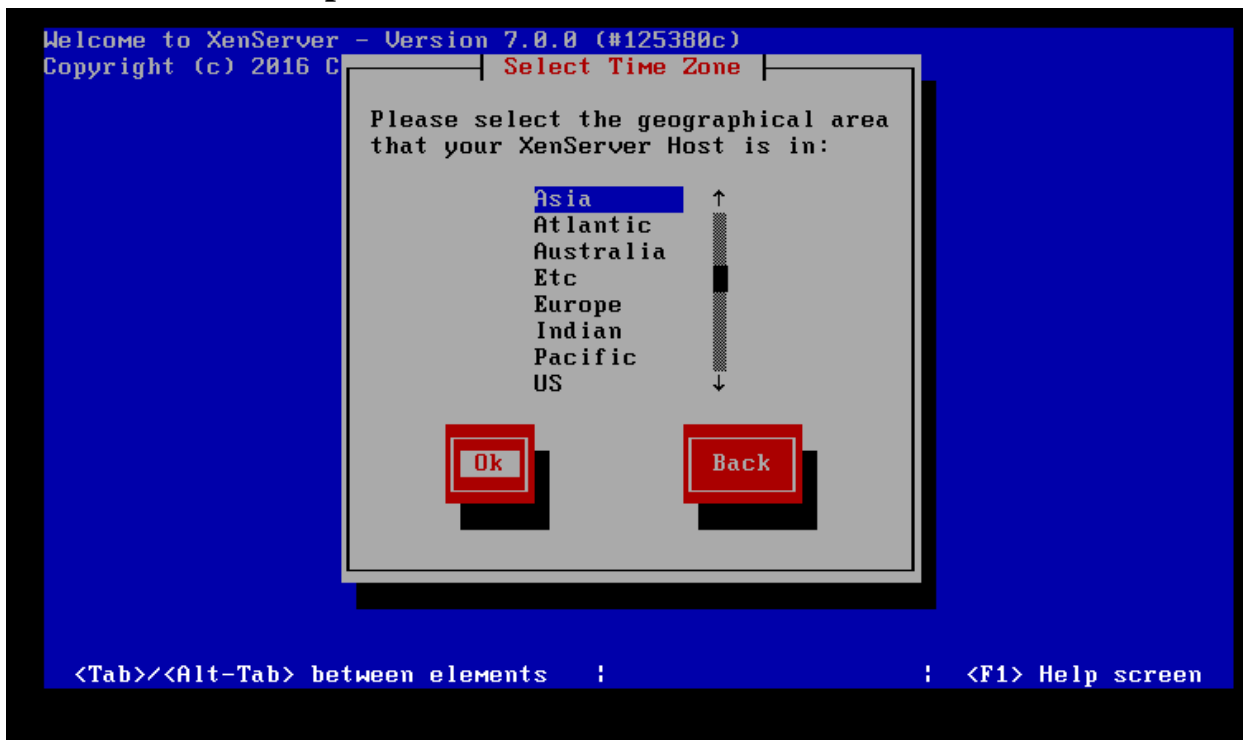
Ok

Back

<Tab>/<Alt-Tab> between elements : : <F1> Help screen



Select the Kolkata option.



Welcome to XenServer - Version 7.0.0 (#125380c)  
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### 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):

Kolkata  
Krasnoyarsk  
Kuala Lumpur  
Kuching  
Kuwait  
Macau  
Magadan  
Makassar



Ok

Back

<Tab>/<Alt-Tab> between elements ; : <F1> Help screen

Click on Ok.

Welcome to XenServer - Version 7.0.0 (#125380c)  
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### System Time

How should the local time be determined?

(Note that if you choose to enter it manually, you will need to respond to a prompt at the end of the installation.)

Using NTP

Manual time entry

Ok

Back

<Tab>/<Alt-Tab> between elements ; : <F1> Help screen

Welcome to XenServer - Version 7.0.0 (#125380c)  
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### NTP Configuration

Please specify details of the NTP servers you wish to use (e.g. pool.ntp.org)?

☒ NTP is configured by my DHCP server

NTP Server 1: \_\_\_\_\_

NTP Server 2: \_\_\_\_\_

NTP Server 3: \_\_\_\_\_

Ok

Back

<Tab>/<Alt-Tab> between elements : : <F1> Help screen

**Click on Install XenServer.**

Welcome to XenServer - Version 7.0.0 (#125380c)  
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### Confirm Installation

We have collected all the information required to install XenServer.

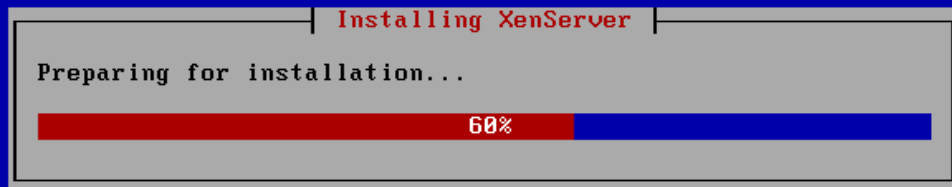
Please confirm you wish to proceed: all data on disk sda will be destroyed!

Install XenServer

Back

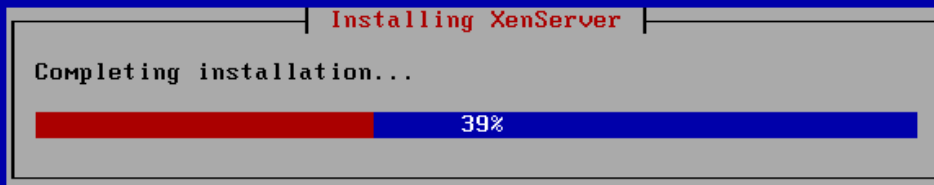
<Tab>/<Alt-Tab> between elements : : <F1> Help screen

Welcome to XenServer - Version 7.0.0 (#125380c)  
Copyright (c) 2016 Citrix Systems, Inc.



Working: Please wait...

Welcome to XenServer - Version 7.0.0 (#125380c)  
Copyright (c) 2016 Citrix Systems, Inc.



Working: Please wait...

**Click on Ok.**



Welcome to XenServer - Version 7.0.0 (#125380c)  
Copyright (c) 2016 Citrix Systems, Inc.

**Installation Complete**

The XenServer installation has completed.

Please remove any local media from the drive,  
and press Enter to reboot.

Ok

<Tab>/<Alt-Tab> between elements : : <F1> Help screen

**CITRIX** | XenServer™



XenServer 7.0

19:54:57

localhost

## 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

VMware, Inc.  
VMware Virtual Platform

XenServer 7.0.0-125380c

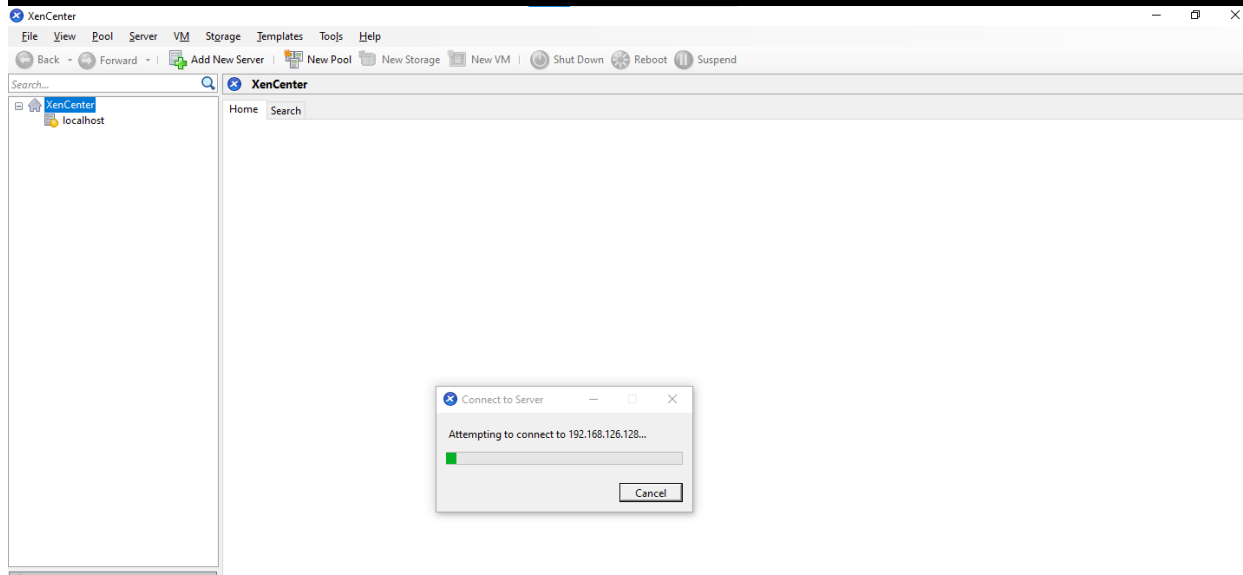
#### Management Network Parameters

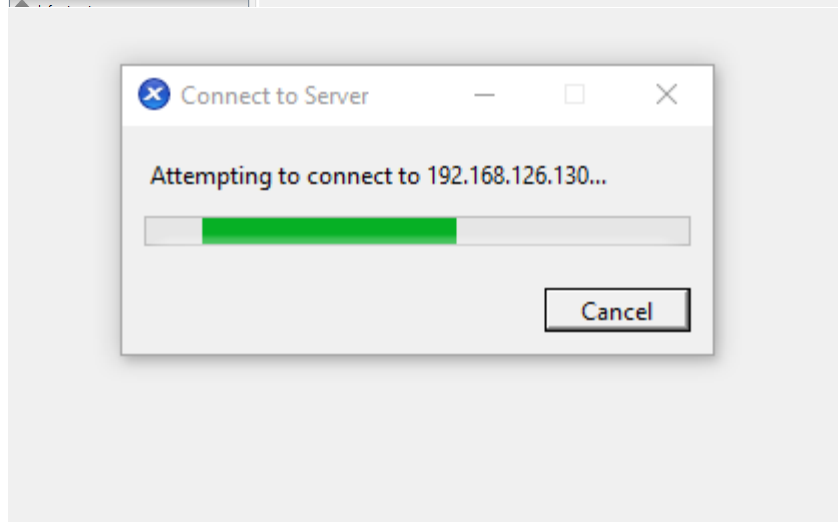
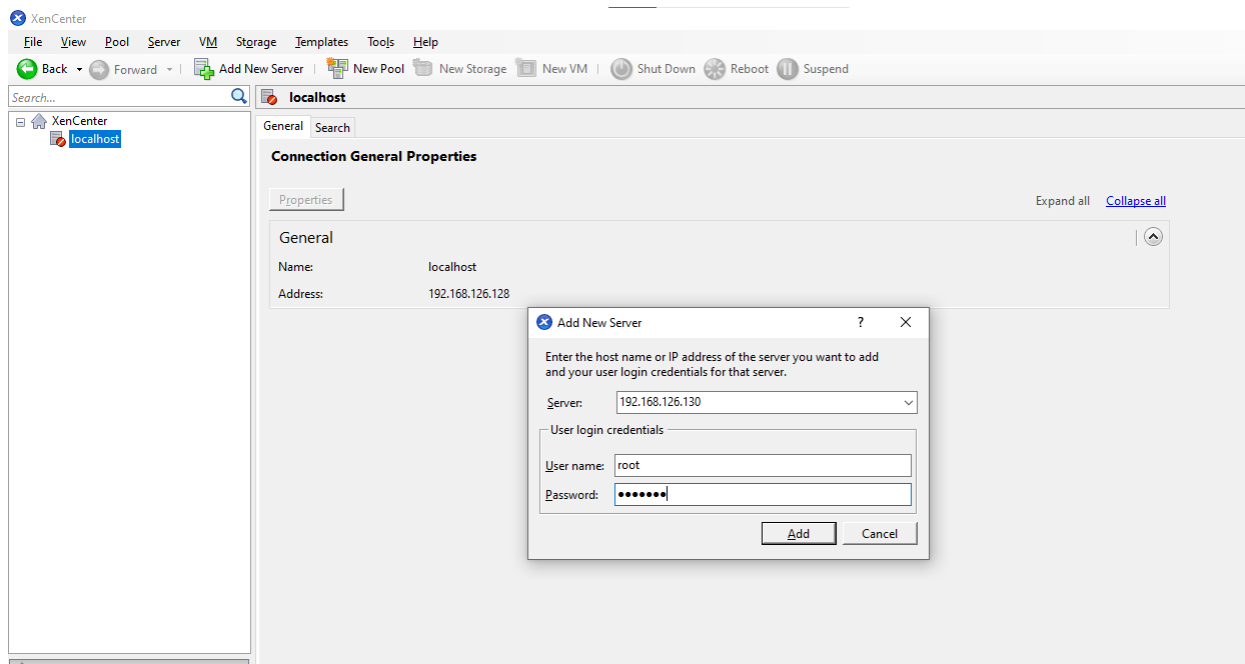
|            |                 |
|------------|-----------------|
| Device     | eth0            |
| IP address | 192.168.126.130 |
| Netmask    | 255.255.255.0   |
| Gateway    | 192.168.126.2   |

Press <Enter> to display the SSL key fingerprints for this host

<Enter> OK <Up/Down> Select

<Enter> Fingerprints <F5> Refresh





## Practical 6

The image displays four sequential screenshots of the VMware Workstation 12 New Virtual Machine Wizard, illustrating the initial steps of creating a new virtual machine.

**Screen 1: Welcome to the New Virtual Machine Wizard**  
This screen introduces the wizard and asks, "What type of configuration do you want?". It offers two options:

- ☐ Typical (recommended): Create a Workstation 12.0 virtual machine in a few easy steps.
- ☒ Custom (advanced): Create a virtual machine with advanced options, such as a SCSI controller type, virtual disk type and compatibility with older VMware products.

The "Next >" button is highlighted.

**Screen 2: Guest Operating System Installation**  
This screen explains that a virtual machine needs an operating system and asks, "How will you install the guest operating system?". It provides three installation methods:

- ☐ Installer disc: Shows "No drives available".
- ☐ Installer disc image file (iso): A dropdown menu shows "D:\CC\Softwares\XenServer-7.0.0-install-cd.iso", with a "Browse..." button.
- ☒ I will install the operating system later. The virtual machine will be created with a blank hard disk.

The "Next >" button is highlighted.

**Screen 3: Select a Guest Operating System**  
This screen asks, "Which operating system will be installed on this virtual machine?". It lists several guest operating systems:

- ☐ Microsoft Windows
- ☐ Linux
- ☐ Novell NetWare
- ☐ Solaris
- ☒ VMware ESX
- ☐ Other

Below this, the "Version" dropdown menu is set to "VMware ESXi 5". The "Next >" button is highlighted.

**Screen 4: Name the Virtual Machine**  
This screen asks, "What name would you like to use for this virtual machine?". It includes a text field for the "Virtual machine name:" containing "VMware ESXi 5 (3)". Below, the "Location:" dropdown menu shows "C:\Users\admin\Documents\Virtual Machines\VMware ESXi 5 (3)", with a "Browse..." button. A note states: "The default location can be changed at Edit > Preferences." The "Next >" button is highlighted.

New Virtual Machine Wizard

**Processor Configuration**  
Specify the number of processors for this virtual machine.

Processors

Number of processors: 2

Number of cores per processor: 2

Total processor cores: 4

Help < Back Next > Cancel

New Virtual Machine Wizard

**Memory for the Virtual Machine**  
How much memory would you like to use for this virtual machine?

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

64 GB -  
32 GB -  
16 GB -  
8 GB -  
4 GB -  
2 GB -  
1 GB -  
512 MB -  
256 MB -  
128 MB -  
64 MB -  
32 MB -  
16 MB -  
8 MB -  
4 MB -

Memory for this virtual machine: 4096 MB

Maximum recommended memory: 6328 MB

Recommended memory: 4096 MB

Guest OS recommended minimum: 4096 MB

Help < Back Next > Cancel

New Virtual Machine Wizard

**Network Type**  
What type of network do you want to add?

Network connection

☐ Use bridged networking  
Give the guest operating system direct access to an external Ethernet network. The guest must have its own IP address on the external network.

☒ Use network address translation (NAT)  
Give the guest operating system access to the host computer's dial-up or external Ethernet network connection using the host's IP address.

☐ Use host-only networking  
Connect the guest operating system to a private virtual network on the host computer.

☐ Do not use a network connection

Help < Back Next > Cancel

New Virtual Machine Wizard

**Select I/O Controller Types**  
Which SCSI controller type would you like to use?

I/O controller types

SCSI Controller:

☐ BusLogic (Not available for 64-bit guests)

☒ LSI Logic (Recommended)

☐ LSI Logic SAS

Help < Back Next > Cancel

New Virtual Machine Wizard

**Select a Disk Type**  
What kind of disk do you want to create?

Virtual disk type

☐ IDE

☒ SCSI (Recommended)

☐ SATA

Help < Back Next > Cancel

New Virtual Machine Wizard

**Select a Disk**  
Which disk do you want to use?

Disk

☒ Create a new virtual disk  
A virtual disk is composed of one or more files on the host file system, which will appear as a single hard disk to the guest operating system. Virtual disks can easily be copied or moved on the same host or between hosts.

☐ Use an existing virtual disk  
Choose this option to reuse a previously configured disk.

☐ Use a physical disk (for advanced users)  
Choose this option to give the virtual machine direct access to a local hard disk.

Help < Back Next > Cancel

New Virtual Machine Wizard

**Specify Disk Capacity**  
How large do you want this disk to be?

Maximum disk size (GB): 50.0

Recommended size for VMware ESXi 5: 40 GB

☐ Allocate all disk space now.  
Allocating the full capacity can enhance performance but requires all of the physical disk space to be available right now. If you do not allocate all the space now, the virtual disk starts small and grows as you add data to it.

☐ 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

New Virtual Machine Wizard

**Specify Disk File**  
Where would you like to store the disk file?

Disk File

One disk file will be created for each 2 GB of virtual disk capacity. File names for each file beyond the first will be automatically generated using the file name provided here as a basis.

VMware ESXi 5 (3).vmdk Browse...

Help < Back Next > Cancel

## New Virtual Machine Wizard

### Ready to Create Virtual Machine

Click Finish to create the virtual machine. Then you can install VMware ESXi 5.

The virtual machine will be created with the following settings:

Name: VMware ESXi 5 (3)  
Location: C:\Users\admin\Documents\Virtual Machines\VMware...  
Version: Workstation 12.0  
Operating System: VMware ESXi 5  
  
Hard Disk: 50 GB, Split  
Memory: 4096 MB  
Network Adapter: NAT  
Other Devices: 4 CPU cores, CD/DVD, USB Controller

Customize Hardware...

< Back

Finish

Cancel

## Virtual Machine Settings

Hardware Options

| Device           | Summary     |
|------------------|-------------|
| Memory           | 4 GB        |
| Processors       | 4           |
| Hard Disk (SCSI) | 50 GB       |
| CD/DVD (IDE)     | Auto detect |
| Network Adapter  | NAT         |
| USB Controller   | Present     |
| Display          | Auto detect |

### Device status

- ☐ Connected  
☒ Connect at power on

### Connection

- ☐ Use physical drive:  
Auto detect  
☒ Use ISO image file:

D:\CC\Softwares\XenServer-7.0.0

Browse...

Advanced...

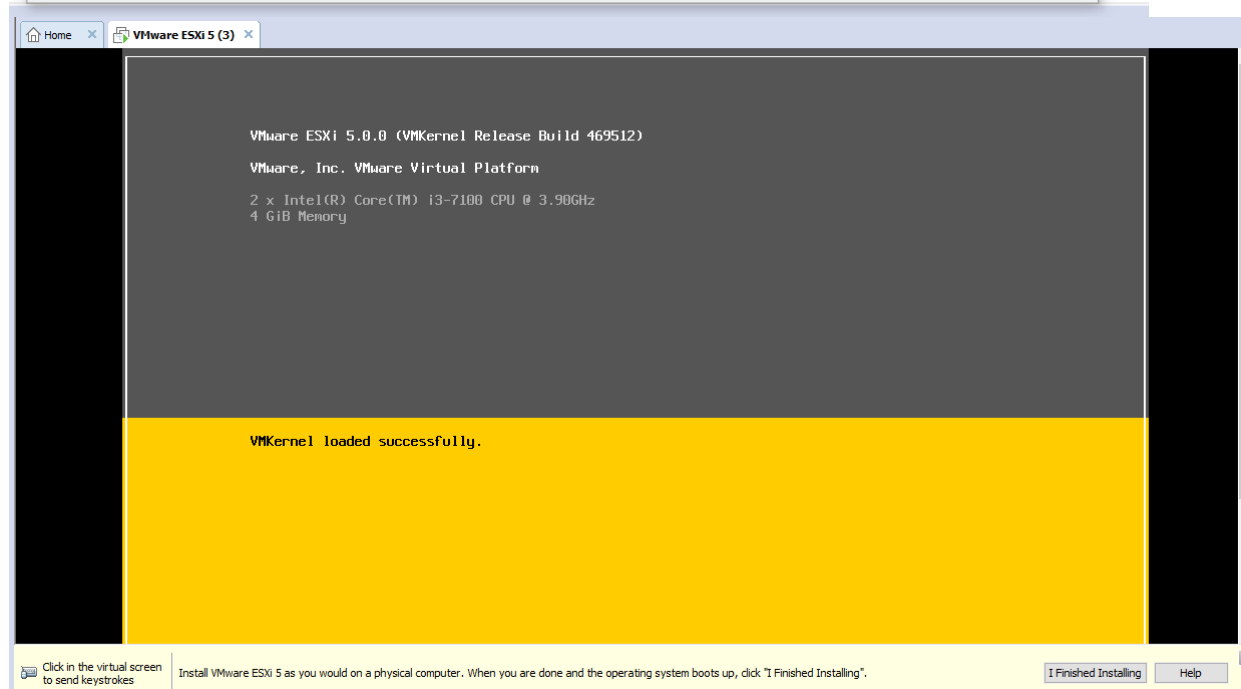
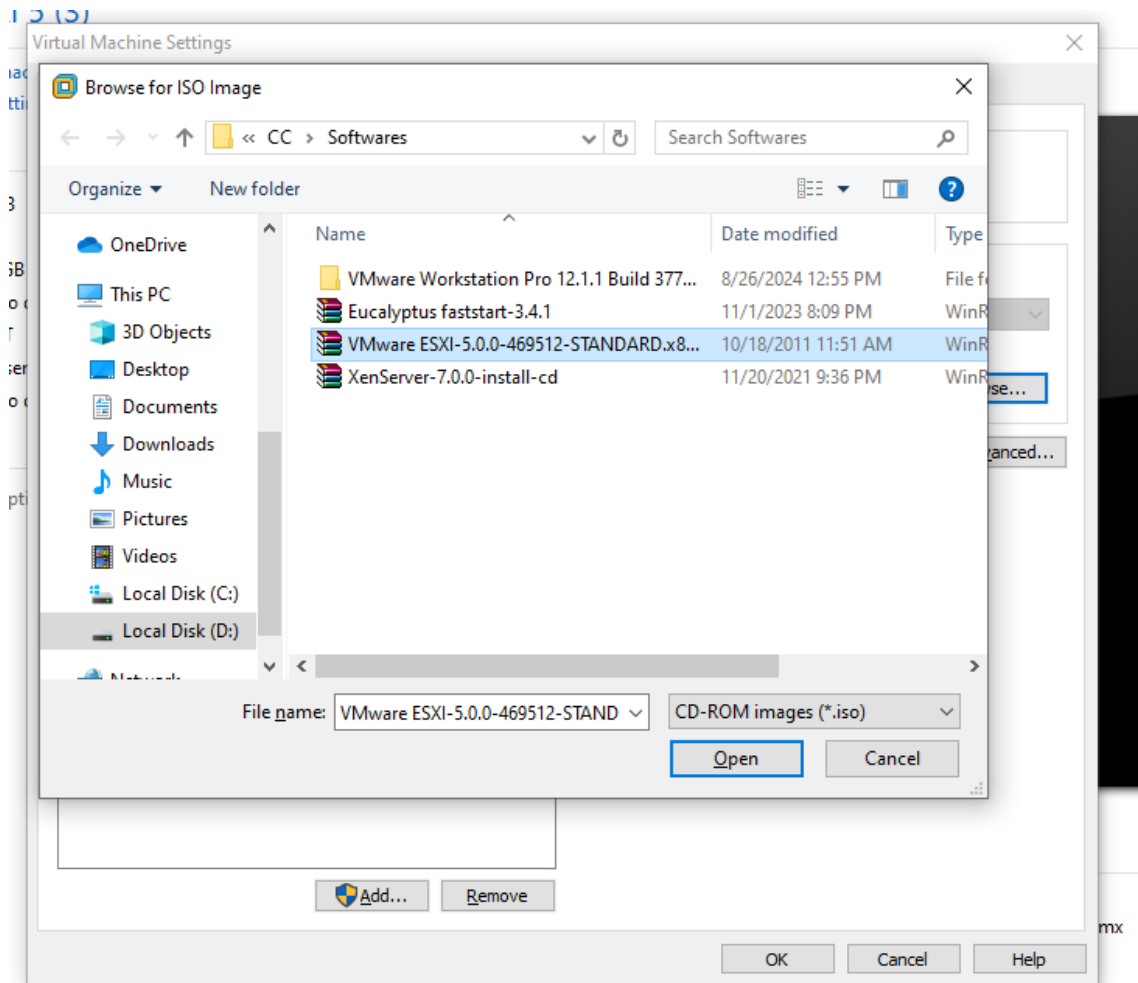
Add...

Remove

OK

Cancel

Help

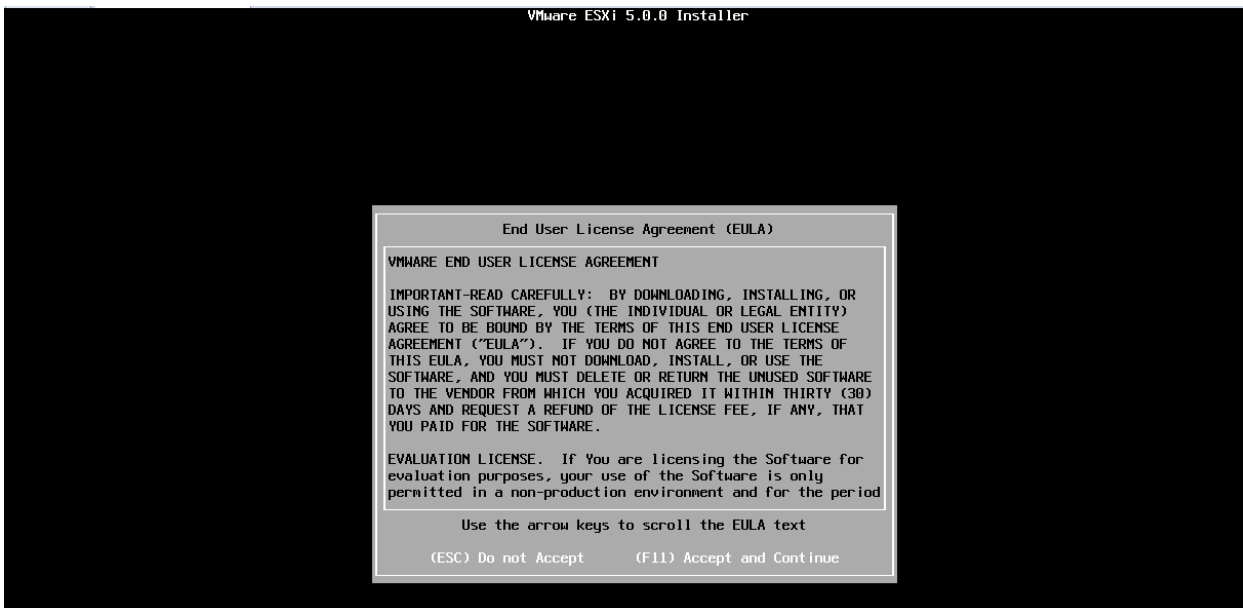




**Press the continue.**



**Accept the License Agreement.**



**Select the all default one option which one is recommended by the system.**

Select a Disk to Install or Upgrade

\* Contains a VMFS partition

| Storage Device                                 | Capacity  |
|--|-----------|
| Local:   |           |
| VMware, VMware Virtual S (mpx.vmhbal:CB:T0:L0) | 50.00 GiB |
| Remote:  |           |
| (none)   |           |

(Esc) Cancel (F1) Details (F5) Refresh (Enter) Continue

Please select a keyboard layout

Swiss French  
Swiss German  
Turkish  
**US Default**  
US Dvorak  
Ukrainian  
United Kingdom

Use the arrow keys to scroll.

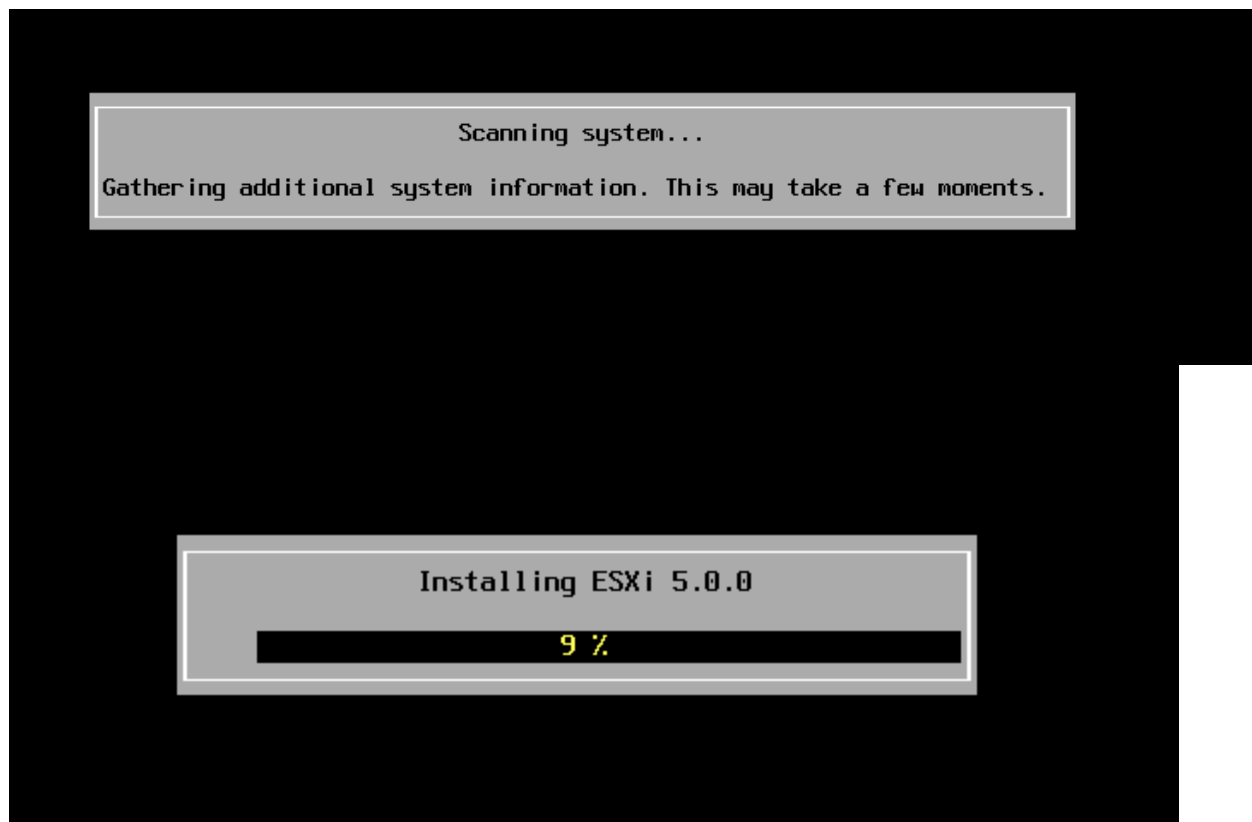
(Esc) Cancel (F9) Back (Enter) Continue

Please enter a root password (recommended)

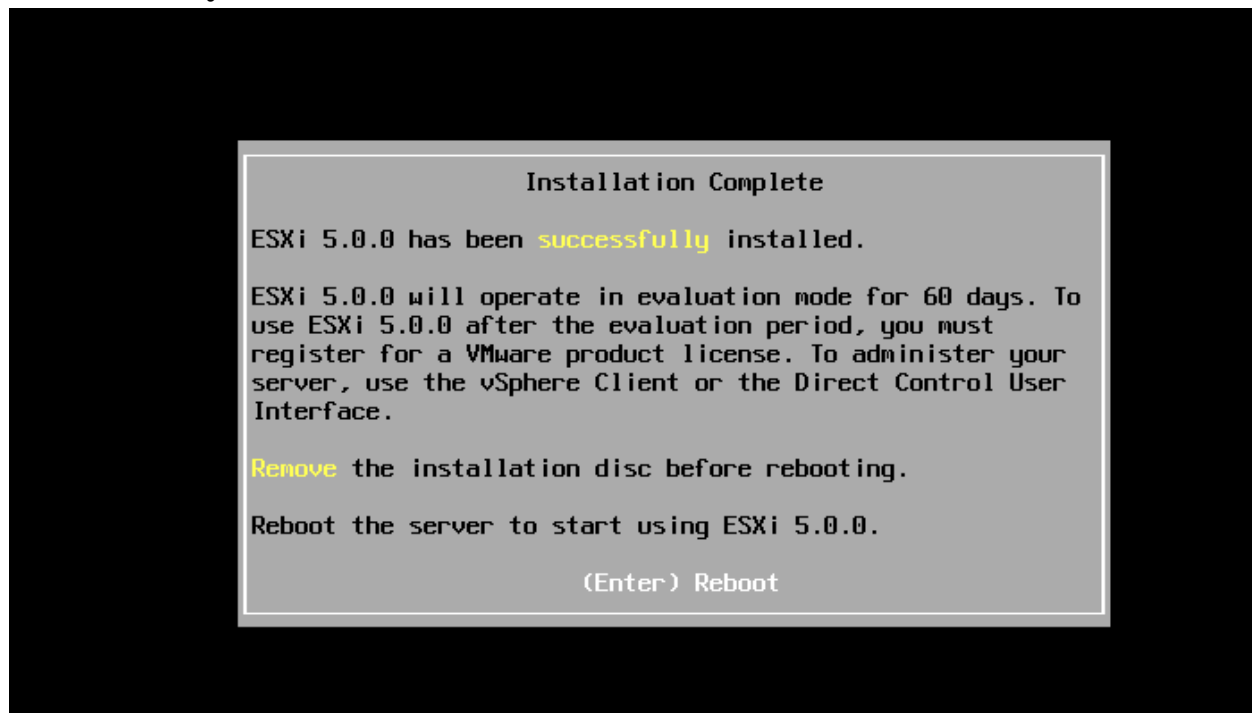
Root password: \*\*\*\*\*  
Confirm password: \*\*\*\*\*\_

Passwords match.

(Esc) Cancel (F9) Back (Enter) Continue



## Reboot the system



VMware ESXi 5.0.0 (VMKernel Release Build 469512)

VMware, Inc. VMware Virtual Platform

2 x Intel(R) Core(TM) i3-7100 CPU @ 3.90GHz  
4 GiB Memory

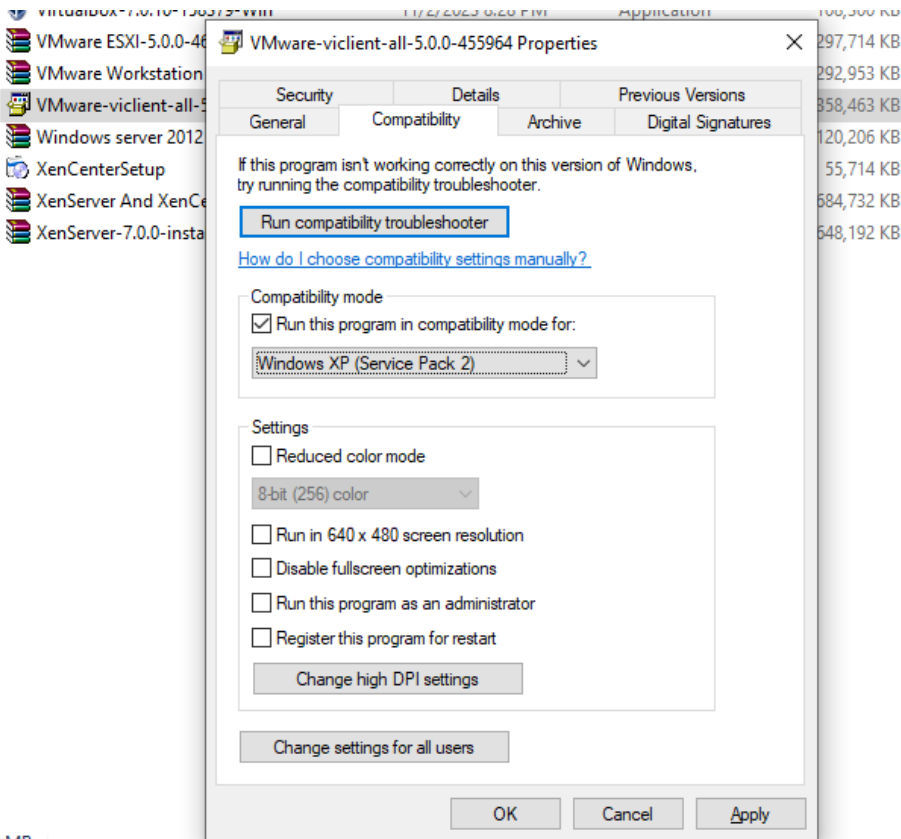
VMKernel loaded successfully.

VMware ESXi 5.0.0 (VMKernel Release Build 469512)

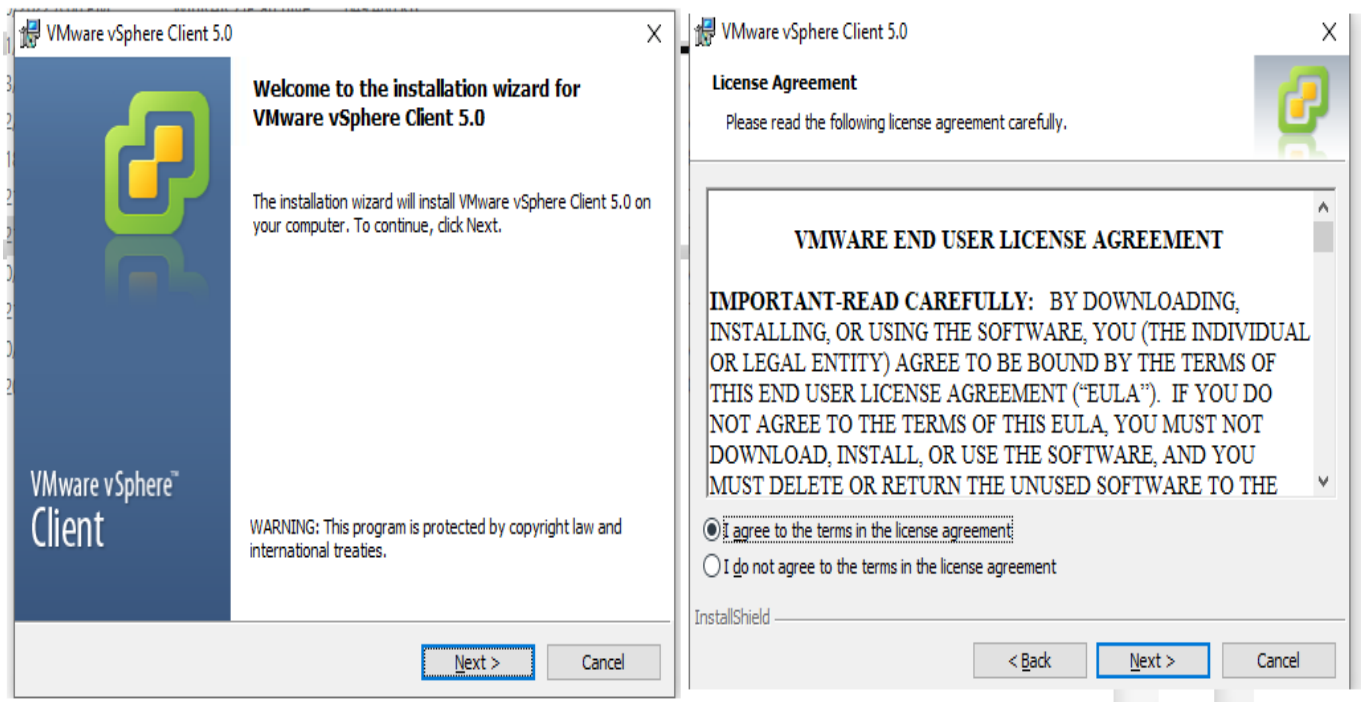
VMware, Inc. VMware Virtual Platform

2 x Intel(R) Core(TM) i3-7100 CPU @ 3.90GHz  
4 GiB Memory

Download tools to manage this host from:  
<http://192.168.126.134/> (DHCP)



**Install the vSphere Client. Click on the Next.**



**Enter the User Name. And click on the Next.**

VMware vSphere Client 5.0

**Customer Information**

Please enter your information.

User Name:

Organization:

InstallShield

< Back Next > Cancel

VMware vSphere Client 5.0

**Destination Folder**

Select the folder in which to install the product.

Install vSphere Client to:

C:\Program Files (x86)\VMware\Infrastructure

Change...

InstallShield

< Back Next > Cancel

VMware vSphere Client 5.0

**Ready to Install the Program**

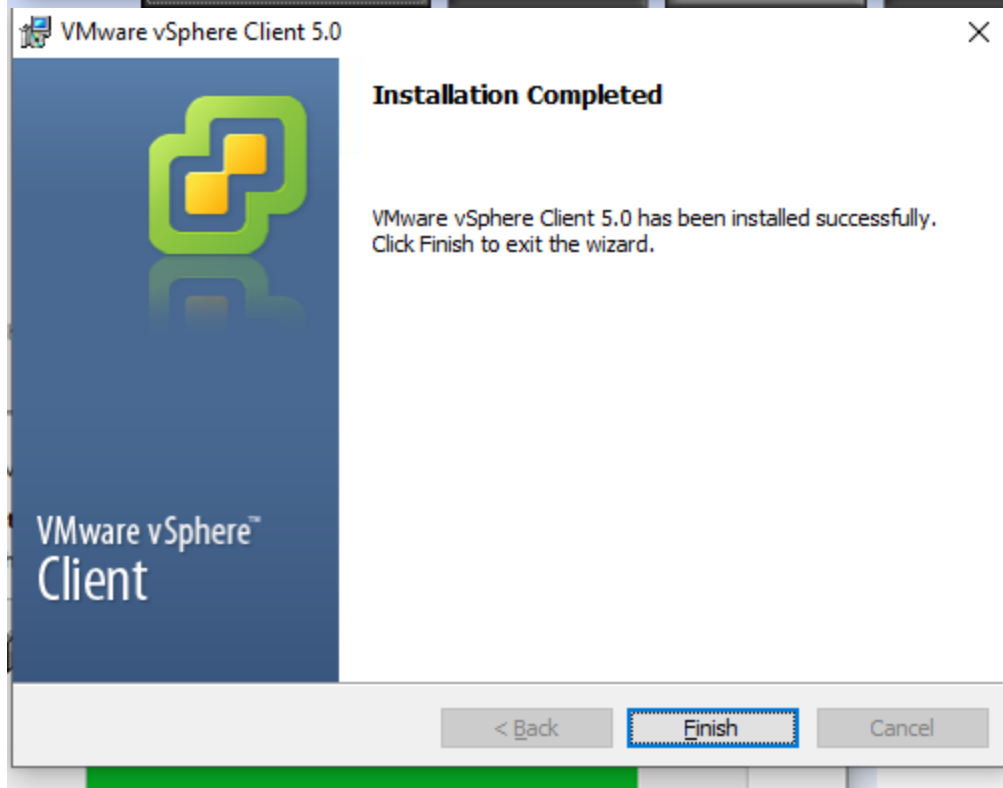
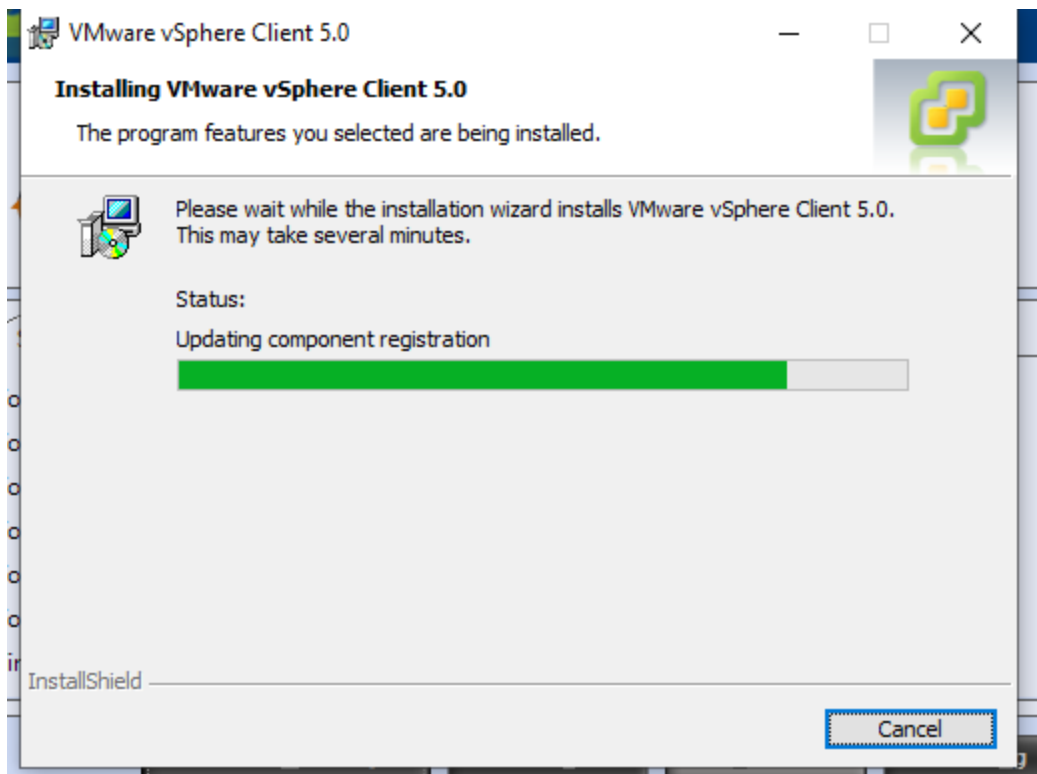
The wizard is ready to begin installation.

Click Install to begin the installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

InstallShield

< Back Install Cancel



**Enter the IP address, Username and Password.**

VMware vSphere Client

vmware

VMware vSphere™ Client

To directly manage a single host, enter the IP address or host name.  
To manage multiple hosts, enter the IP address or name of a vCenter Server.

IP address / Name:

192.168.126.134

User name:

root

Password:

\*\*\*\*\*

☐ Use Windows session credentials

Connecting...

Login

Cancel

Help

192.168.231.137 - vSphere Client

File Edit View Inventory Administration Plug-ins Help

Home

Inventory

Inventory

Administration

Roles

System Logs

Recent Tasks

Name, Target or Status contains:  Clear

| Name | Target | Status | Details | Initiated by | Requested Start Ti... | Start Time | Completed |
|------|--------|--------|---------|--------------|-----------------------|------------|-----------|
|------|--------|--------|---------|--------------|-----------------------|------------|-----------|

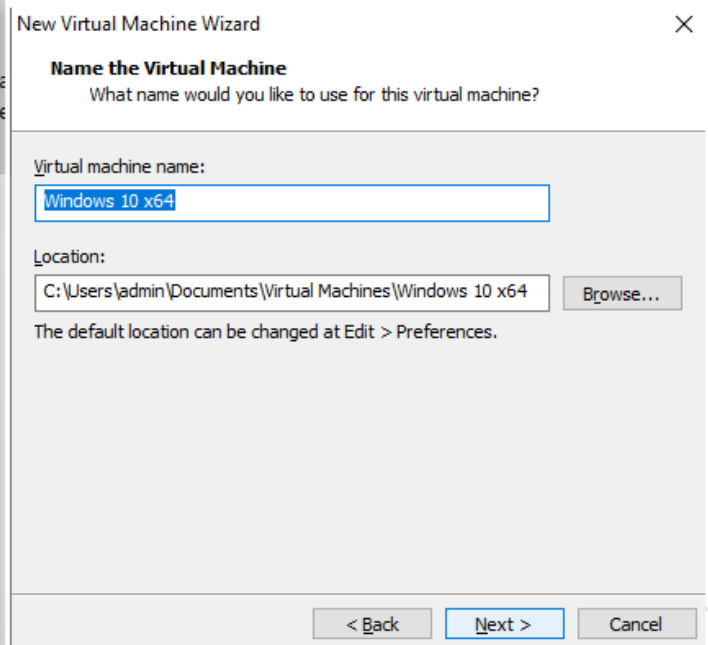
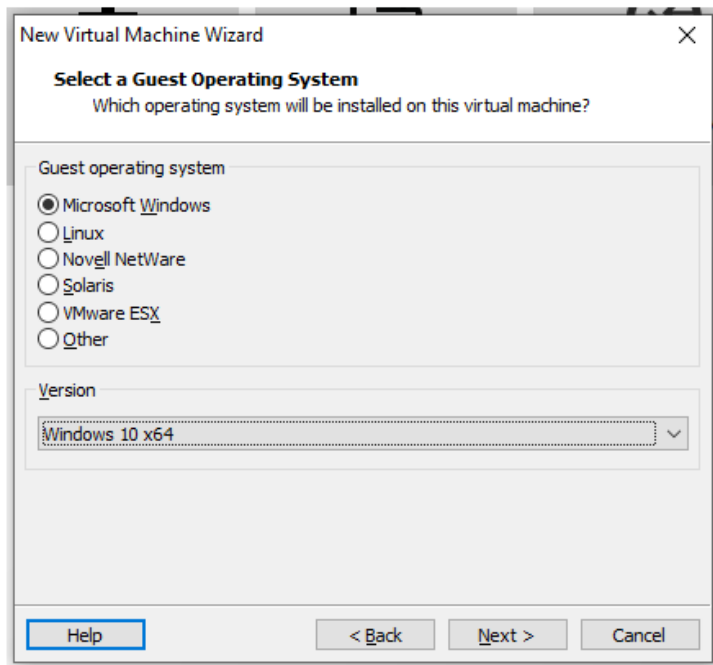
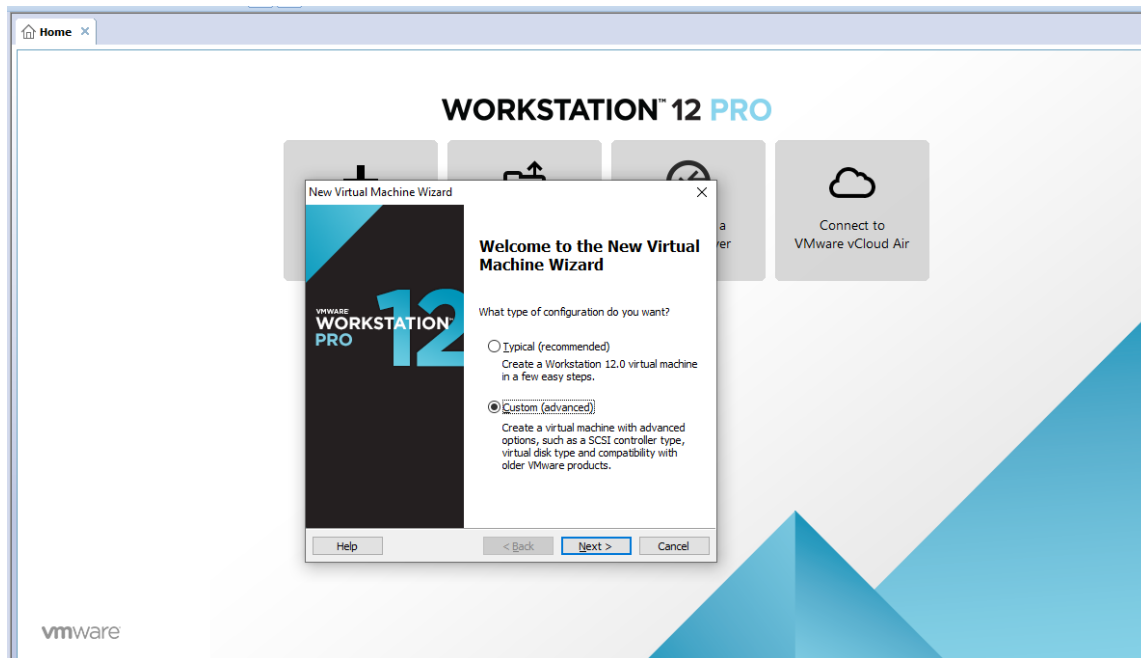
Tasks

Evaluation Mode: 60 days remaining

root



## Practical 7



# New Virtual Machine Wizard

## Firmware Type

What kind of boot device should this virtual machine have?

Firmware type

☒ BIOS

☐ EFI

< Back

Next >

Cancel

# New Virtual Machine Wizard

## Guest Operating System Installation

A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?

Install from:

☐ Installer disc:

No drives available

☐ Installer disc image file (iso):

D:\CC\Softwares\VMware ESXi-5.0.0-469512-STAND#

Browse...

☒ I will install the operating system later.

The virtual machine will be created with a blank hard disk.

Help

< Back

Next >

Cancel

# New Virtual Machine Wizard

## Name the Virtual Machine

What name would you like to use for this virtual machine?

Virtual machine name:

VMware ESXi 5 (6)

Location:

C:\Users\admin\Documents\Virtual Machines\VMware ESXi 5 (6)

Browse...

The default location can be changed at Edit > Preferences.

< Back

Next >

Cancel

# New Virtual Machine Wizard

## Processor Configuration

Specify the number of processors for this virtual machine.

Processors

Number of processors:

2

Number of cores per processor:

2

Total processor cores:

4

Help

< Back

Next >

Cancel

New Virtual Machine Wizard

**Processor Configuration**  
Specify the number of processors for this virtual machine.

Processors

Number of processors: 2

Number of cores per processor: 2

Total processor cores: 4

Help < Back Next > Cancel

New Virtual Machine Wizard

**Memory for the Virtual Machine**  
How much memory would you like to use for this virtual machine?

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

64 GB -  
32 GB -  
16 GB -  
8 GB -  
4 GB -  
2 GB -  
1 GB -  
512 MB -  
256 MB -  
128 MB -  
64 MB -  
32 MB -  
16 MB -  
8 MB -  
4 MB -

Memory for this virtual machine: 4096 MB

Maximum recommended memory: 6328 MB

Recommended memory: 4096 MB

Guest OS recommended minimum: 4096 MB

Help < Back Next > Cancel

New Virtual Machine Wizard

**Network Type**  
What type of network do you want to add?

Network connection

☐ Use bridged networking  
Give the guest operating system direct access to an external Ethernet network. The guest must have its own IP address on the external network.

☒ Use network address translation (NAT)  
Give the guest operating system access to the host computer's dial-up or external Ethernet network connection using the host's IP address.

☐ Use host-only networking  
Connect the guest operating system to a private virtual network on the host computer.

☐ Do not use a network connection

Help < Back Next > Cancel

New Virtual Machine Wizard

**Select I/O Controller Types**  
Which SCSI controller type would you like to use?

I/O controller types

SCSI Controller:

☐ BusLogic (Not available for 64-bit guests)

☐ LSI Logic (Not supported by Windows 10 x64)

☒ LSI Logic SAS (Recommended)

Help < Back Next > Cancel

New Virtual Machine Wizard

**Select a Disk Type**  
What kind of disk do you want to create?

Virtual disk type

☐ IDE

☒ SCSI (Recommended)

☐ SATA

Help < Back Next > Cancel

New Virtual Machine Wizard

**Select a Disk**  
Which disk do you want to use?

Disk

☒ Create a new virtual disk  
A virtual disk is composed of one or more files on the host file system, which will appear as a single hard disk to the guest operating system. Virtual disks can easily be copied or moved on the same host or between hosts.

☐ Use an existing virtual disk  
Choose this option to reuse a previously configured disk.

☐ Use a physical disk (for advanced users)  
Choose this option to give the virtual machine direct access to a local hard disk.

Help < Back Next > Cancel

New Virtual Machine Wizard

**Specify Disk File**  
Where would you like to store the disk file?

Disk File

One disk file will be created for each 2 GB of virtual disk capacity. File names for each file beyond the first will be automatically generated using the file name provided here as a basis.

Windows 10 x64.vmdk Browse...

Help < Back Next > Cancel

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 12.0                                       |
| Operating System: | Windows 10 x64   |
| Hard Disk:        | 60 GB, Split   |
| Memory:           | 4096 MB  |
| Network Adapter:  | NAT  |
| Other Devices:    | 4 CPU cores, CD/DVD, USB Controller, Printer, Sound... |

Customize Hardware...

< Back Finish Cancel

New Virtual Machine Wizard

Specify Disk Capacity

How large do you want this disk to be?

Maximum disk size (GB):

60.0

Recommended size for VMware ESXi 5: 40 GB

☐ Allocate all disk space now.

Allocating the full capacity can enhance performance but requires all of the physical disk space to be available right now. If you do not allocate all the space now, the virtual disk starts small and grows as you add data to it.

☐ 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

Virtual Machine Settings

Hardware

Options

| Device           | Summary     |
|------------------|-------------|
| Memory           | 4 GB        |
| Processors       | 4           |
| Hard Disk (SCSI) | 60 GB       |
| CD/DVD (SATA)    | Auto detect |
| Network Adapter  | NAT         |
| USB Controller   | Present     |
| Sound Card       | Auto detect |
| Printer          | Present     |
| Display          | Auto detect |

Add...

Remove

Device status

☐ Connected

☒ Connect at power on

Connection

☐ Use physical drive:

Auto detect

☒ Use ISO image file:

D:\CC\Softwares\9600.17050.WIN

Browse...

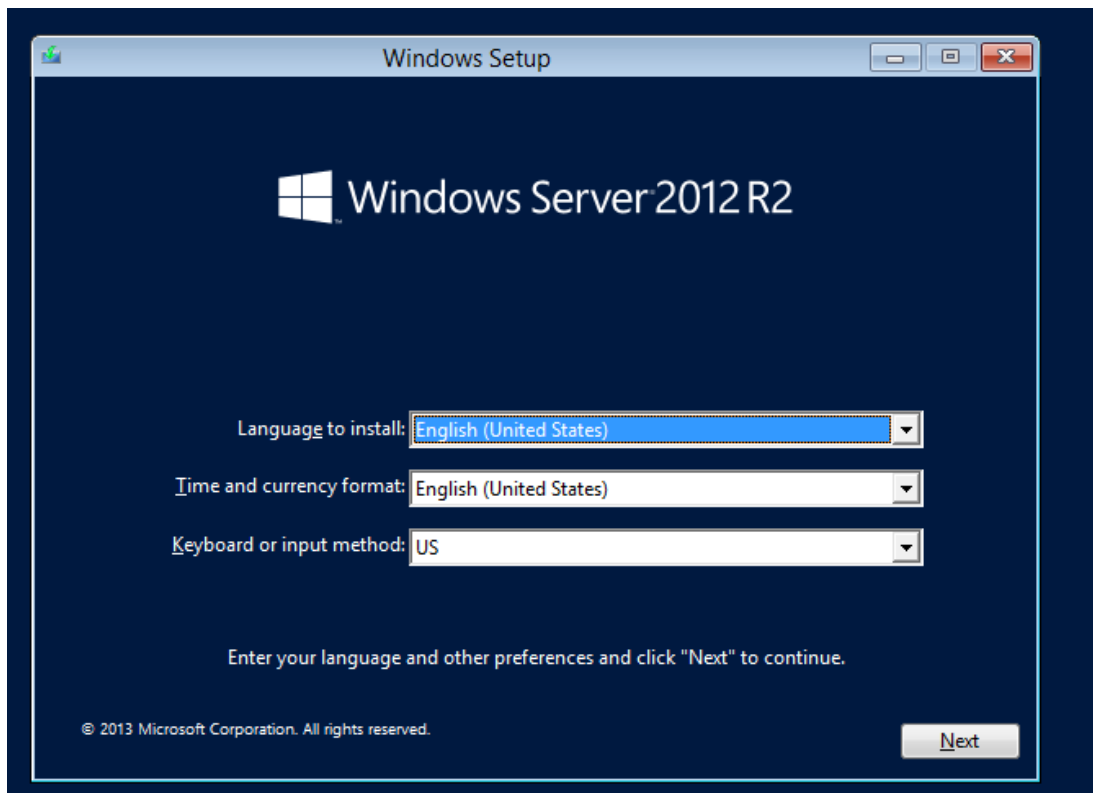
Advanced...

OK

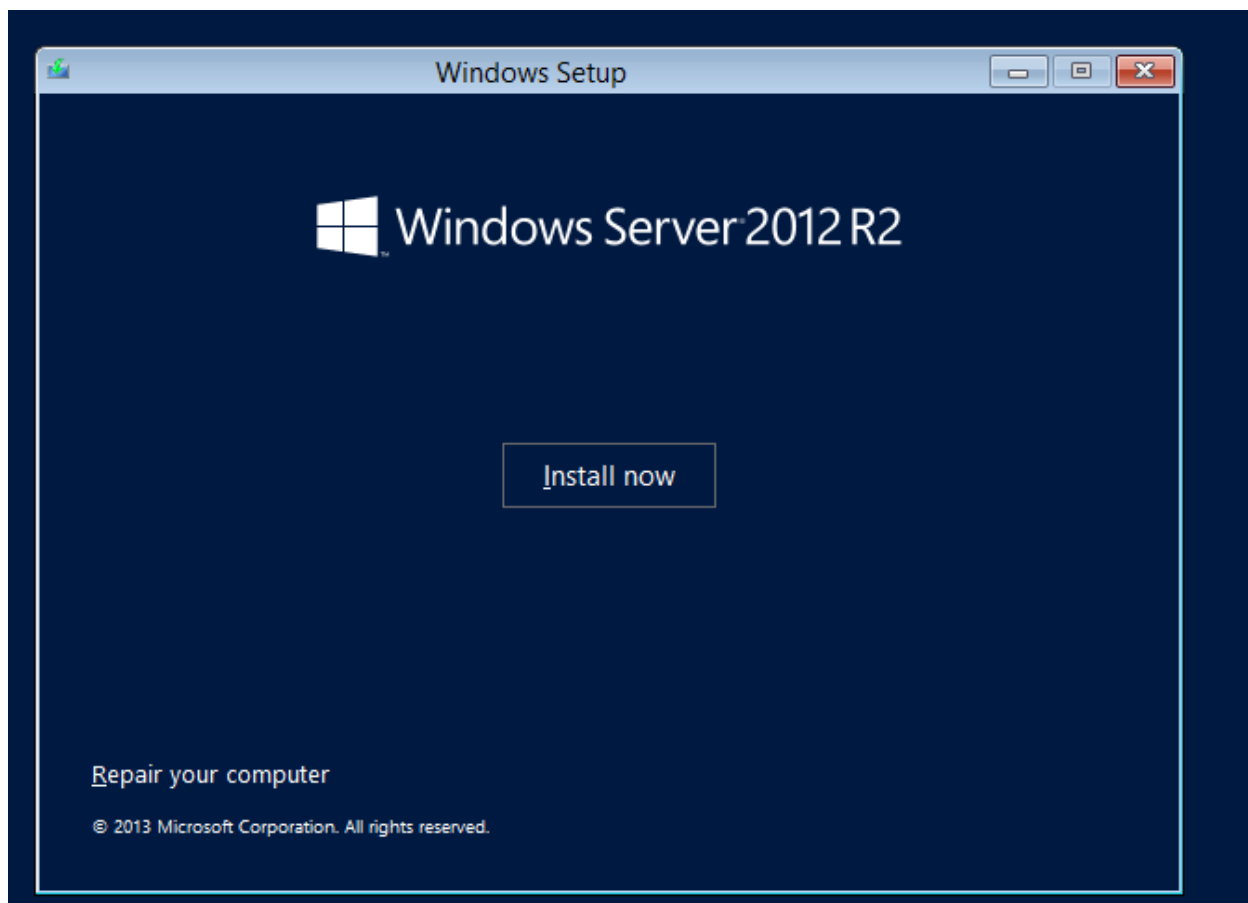
Cancel

Help

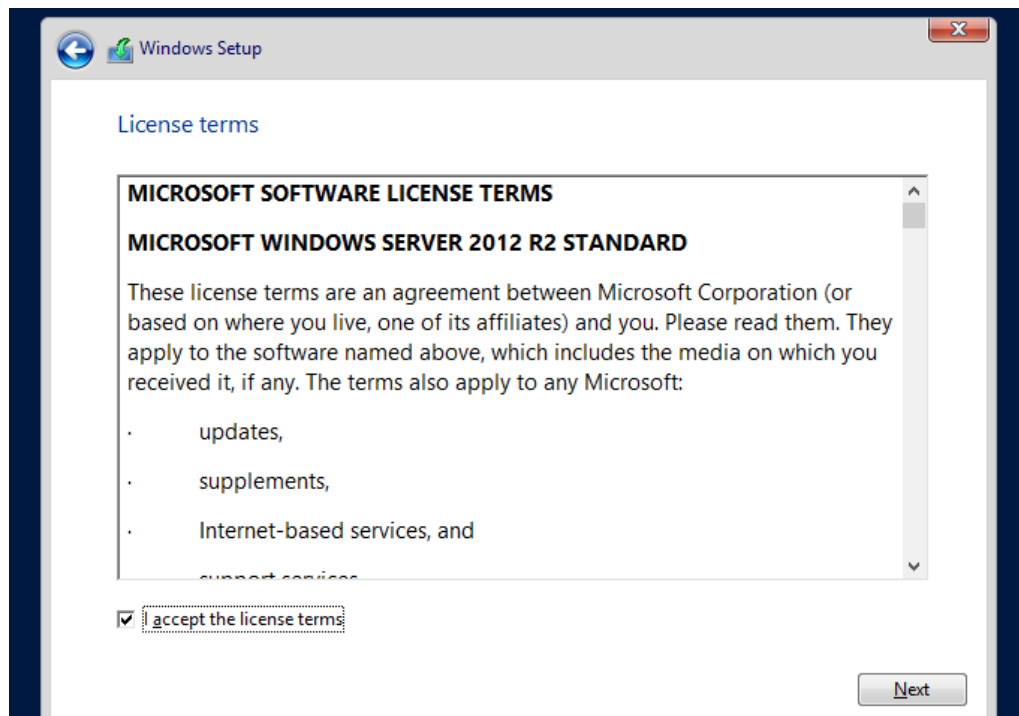
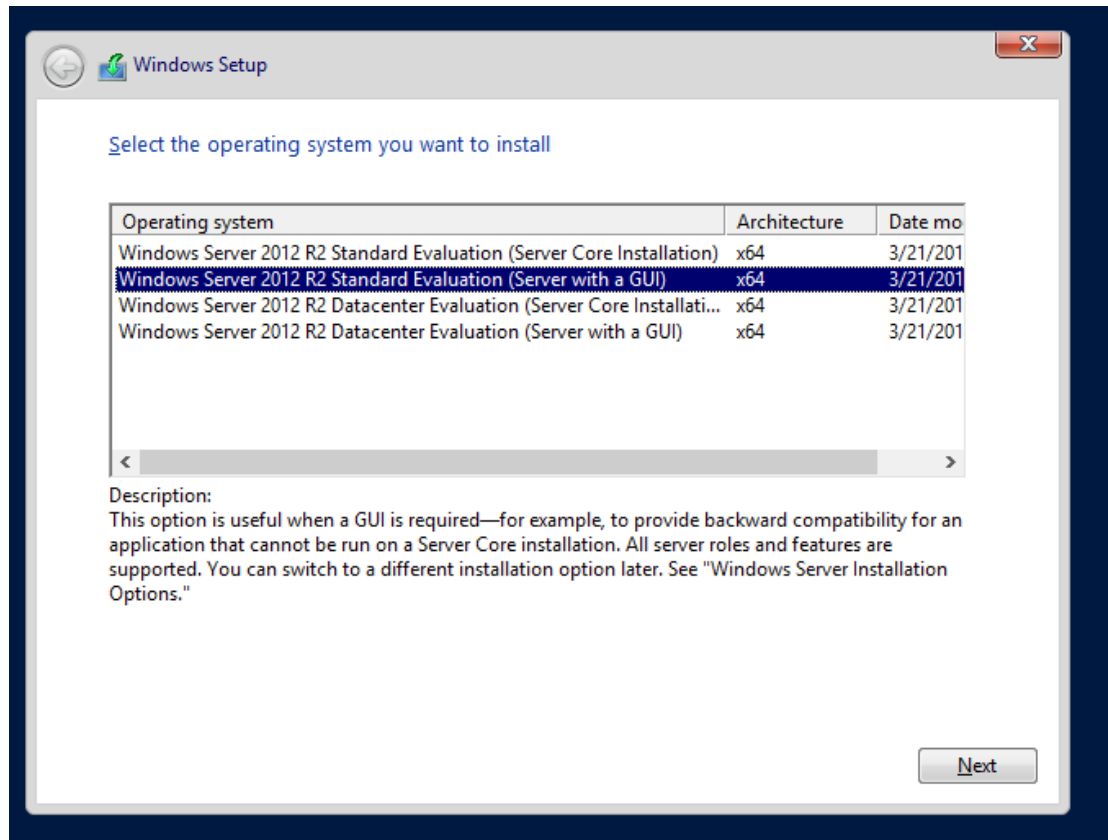
**Click on the next**



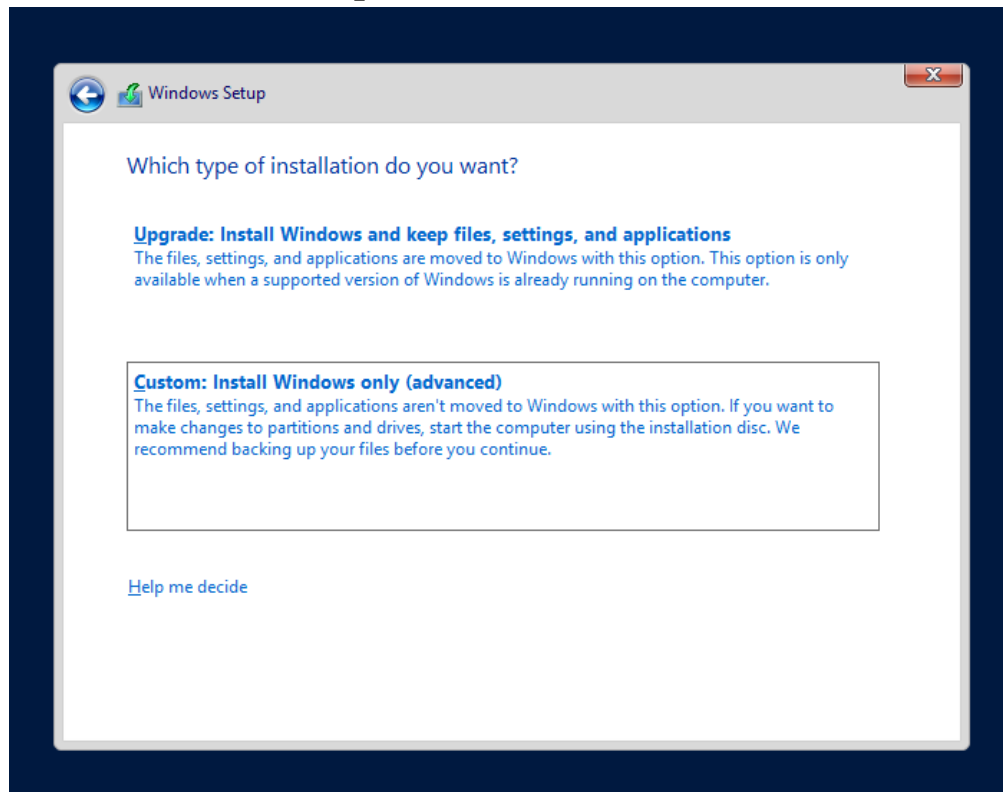
**Click on Install Now**



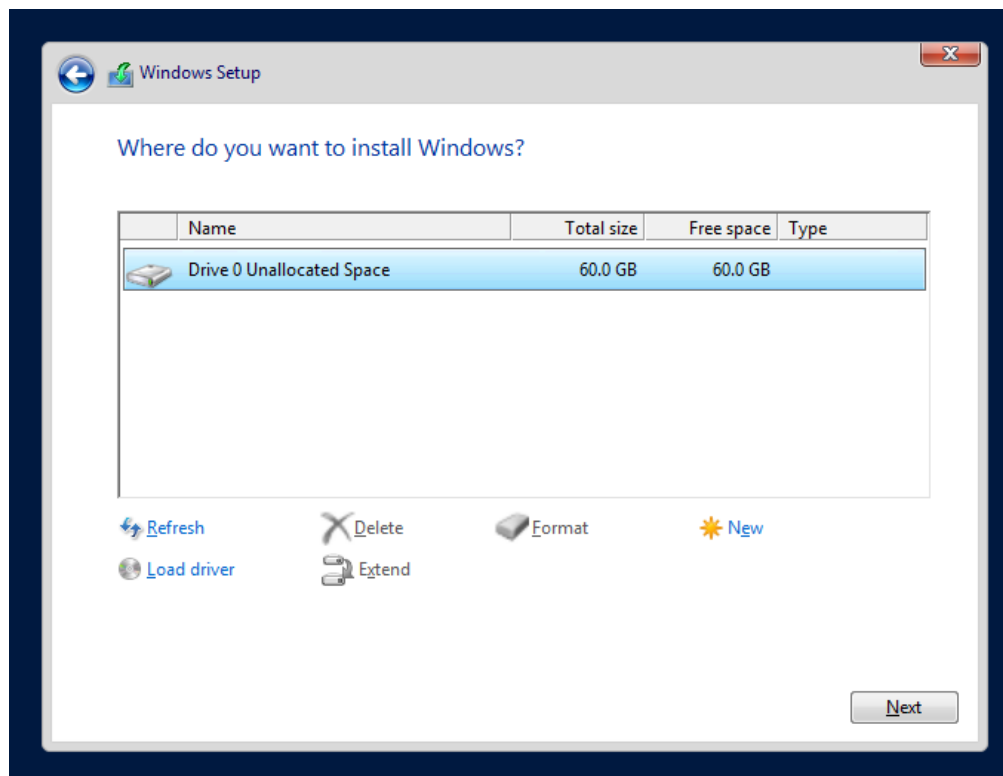
**Click on the Second option and click on the next**



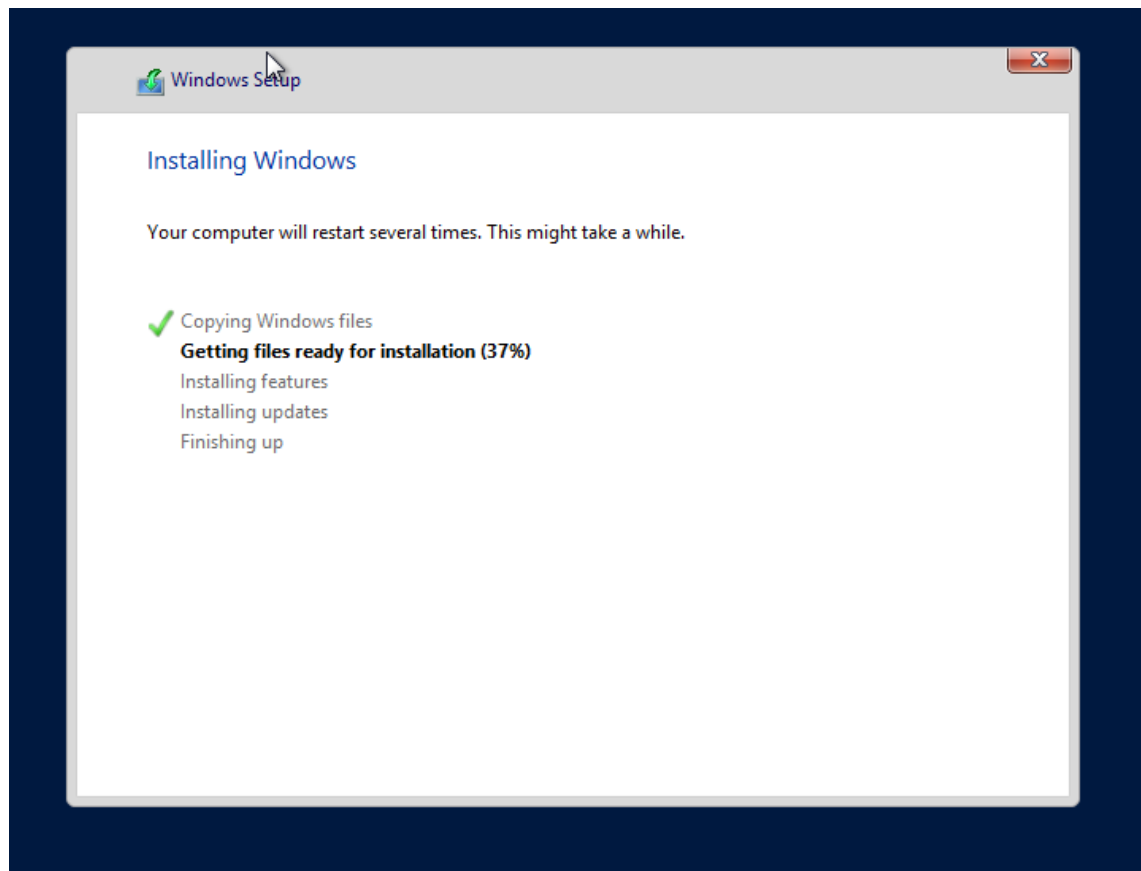
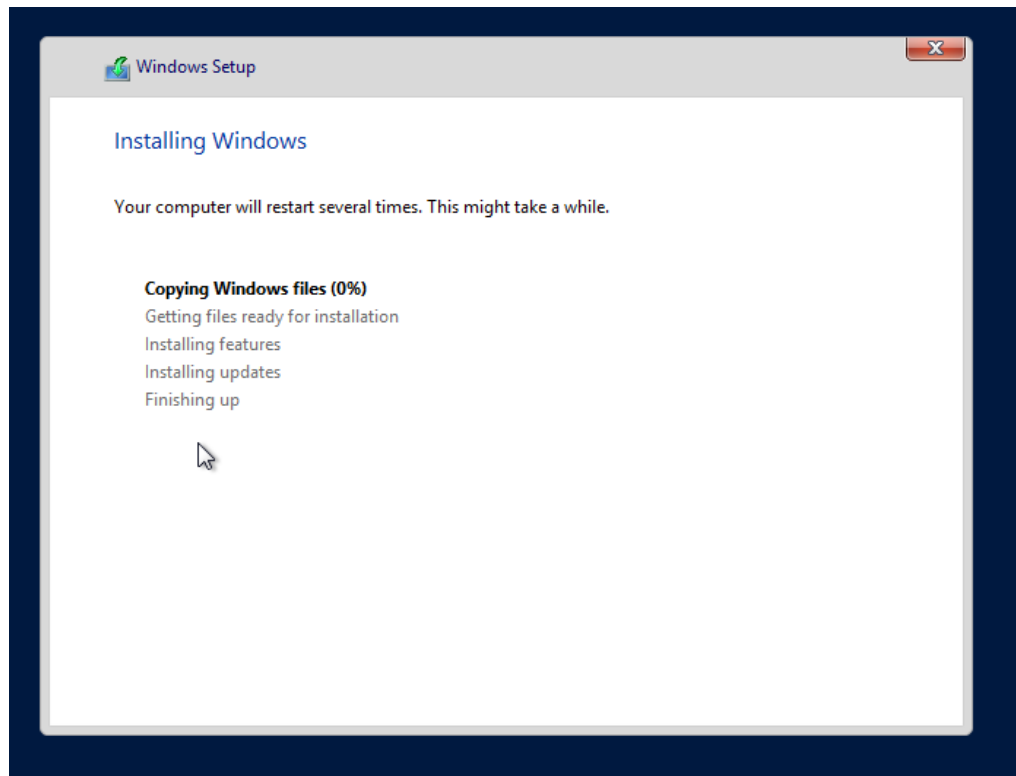
## Click on the custom option



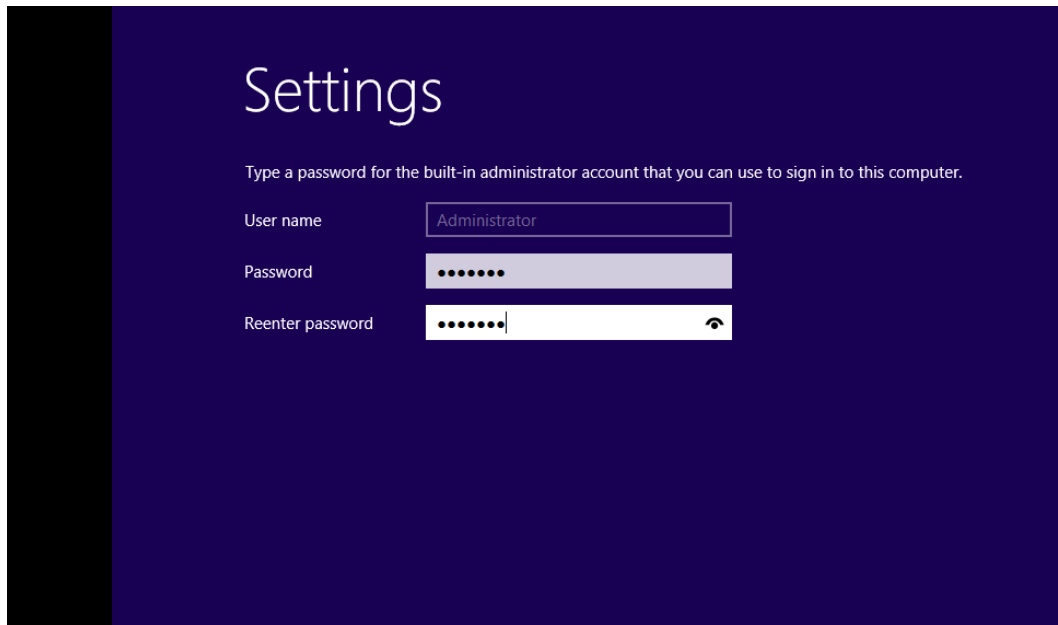
## Click on the next





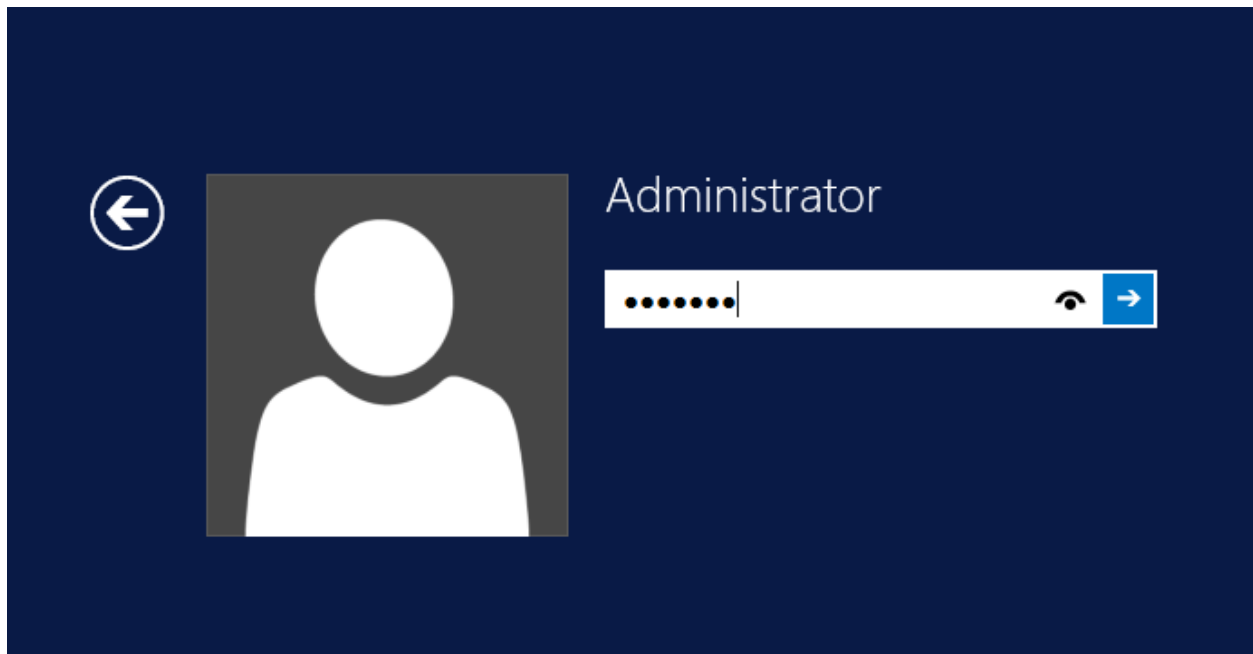


**Enter the username and password.**



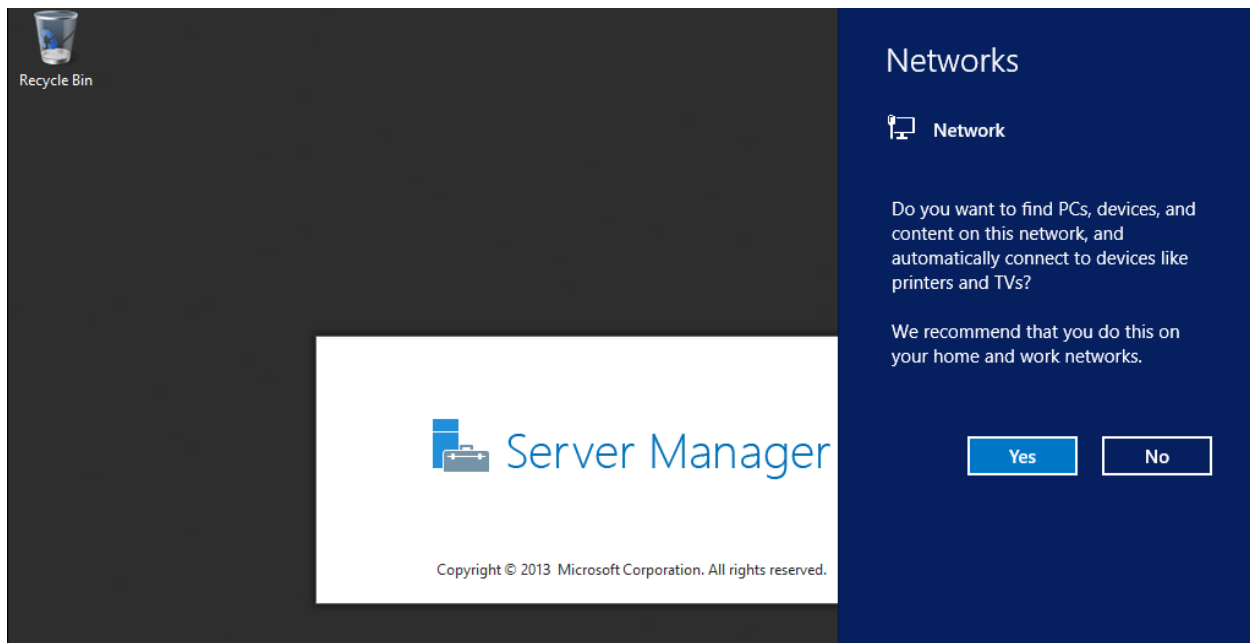
The image shows a Windows Settings window with a dark blue background. The title 'Settings' is at the top. Below it, a message reads: 'Type a password for the built-in administrator account that you can use to sign in to this computer.' There are three input fields: 'User name' with the text 'Administrator', 'Password' with seven dots, and 'Reenter password' with seven dots and a small eye icon to its right.

**Enter the system's password**

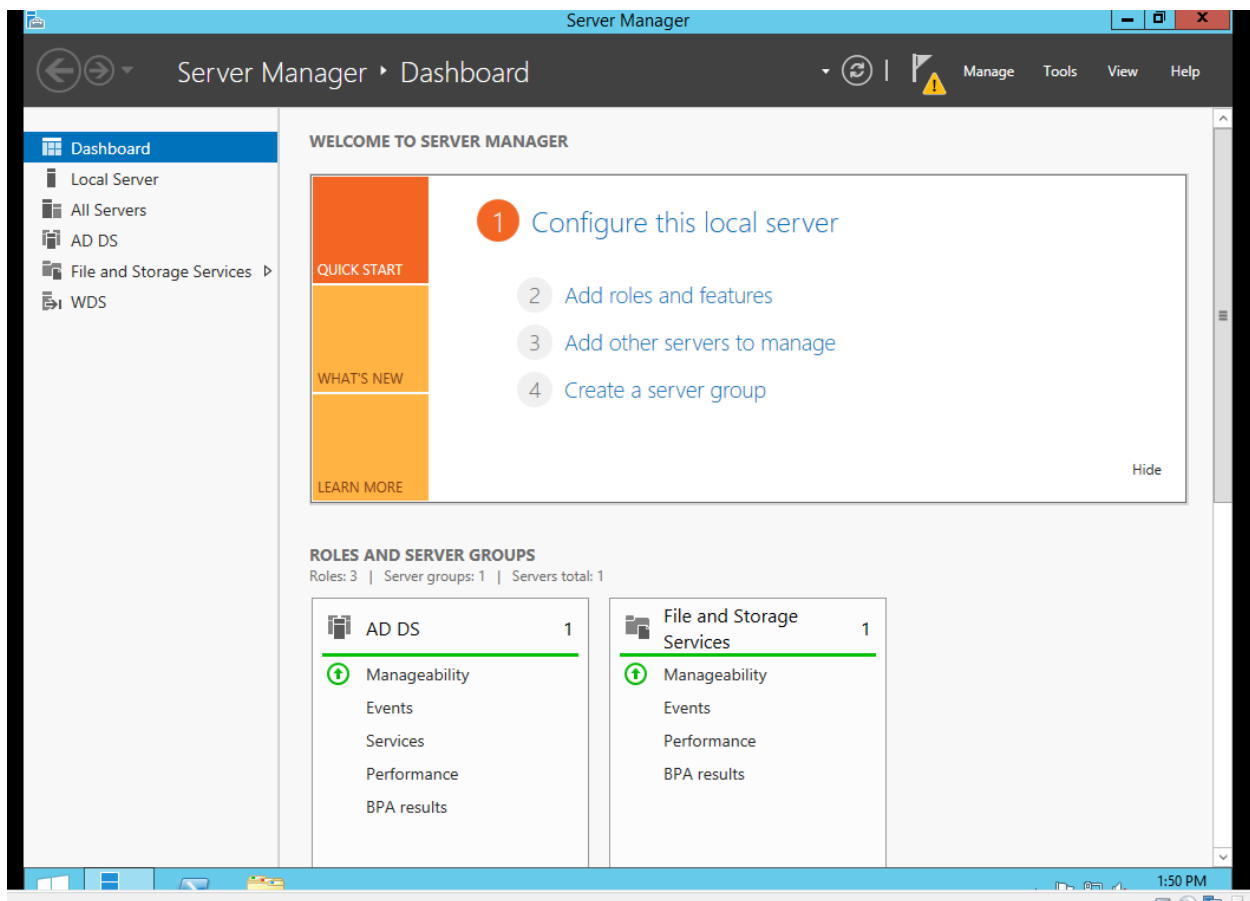


The image shows a Windows login screen with a dark blue background. On the left, there is a circular arrow icon and a placeholder image of a person. To the right of the image, the word 'Administrator' is displayed. Below the name is a password input field with seven dots, an eye icon, and a blue arrow button.

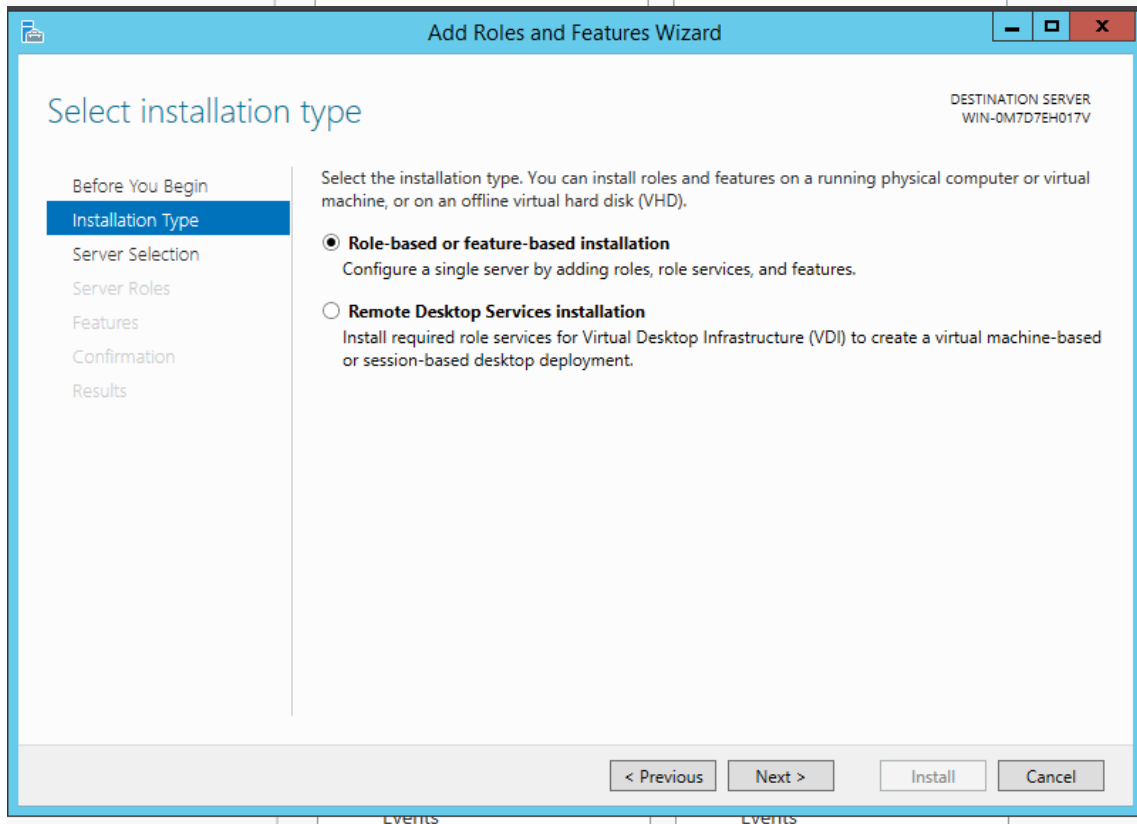
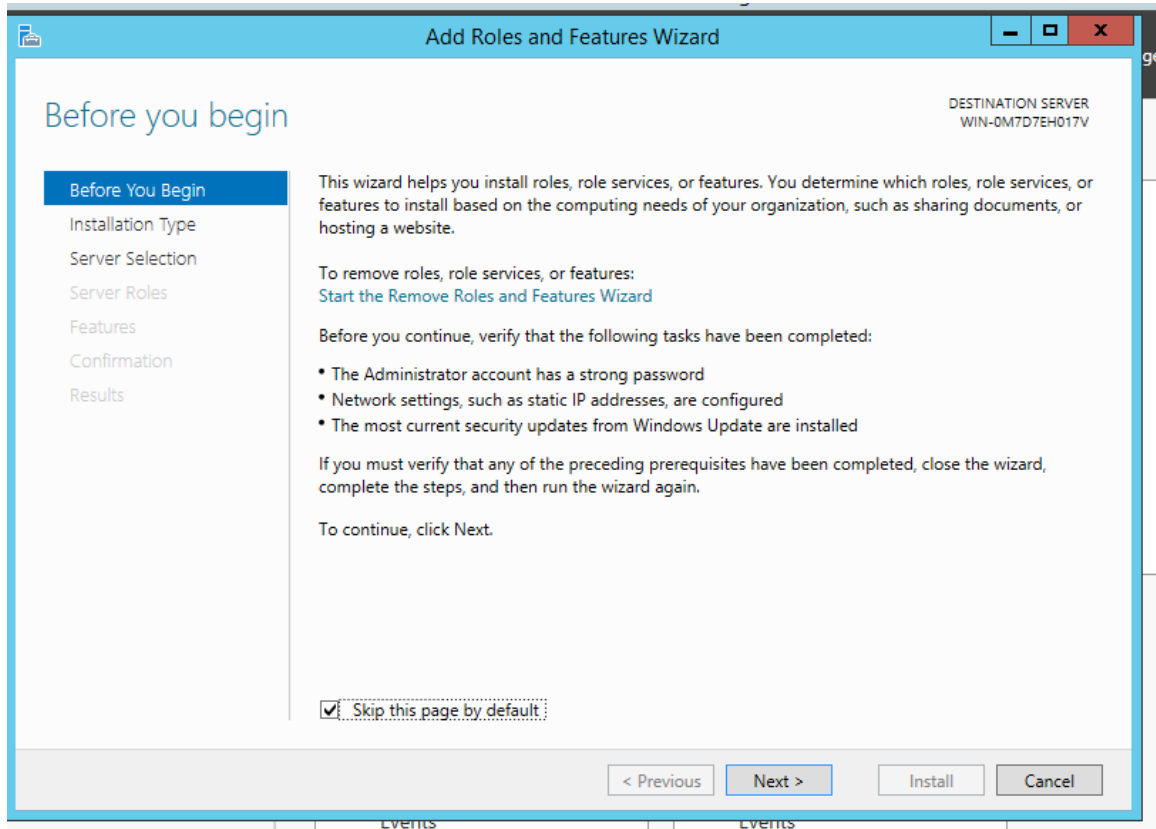
**Select the yes option**

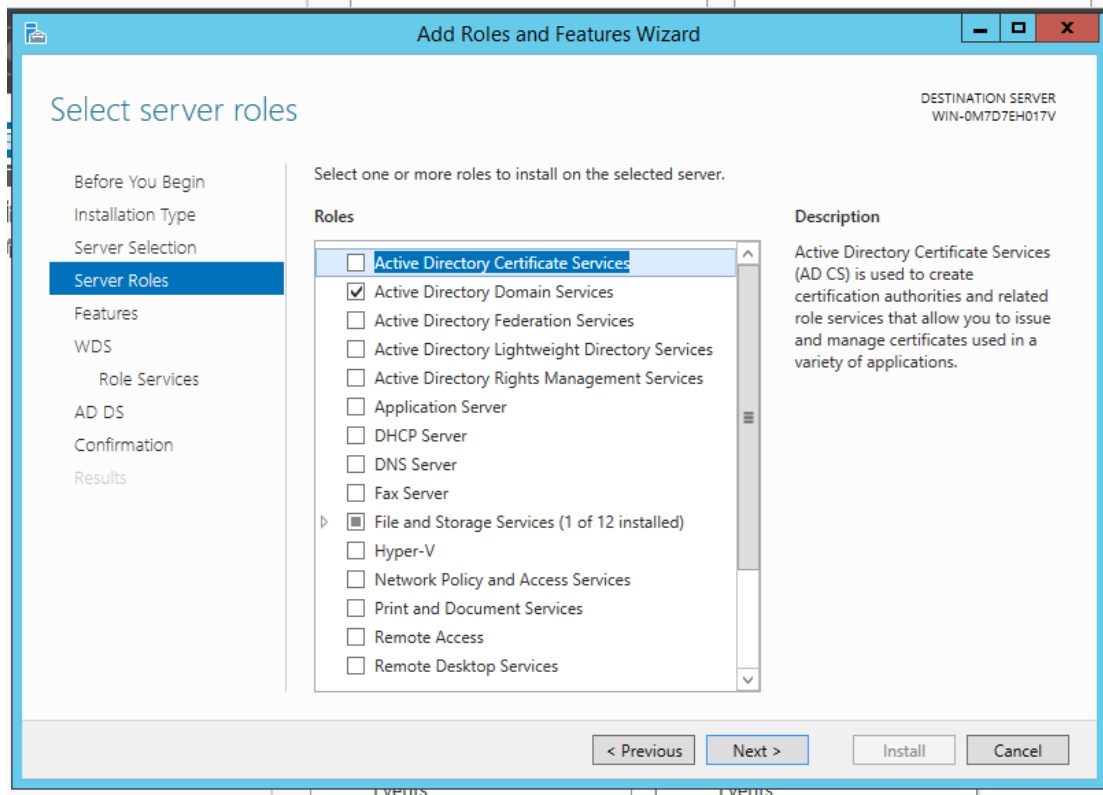
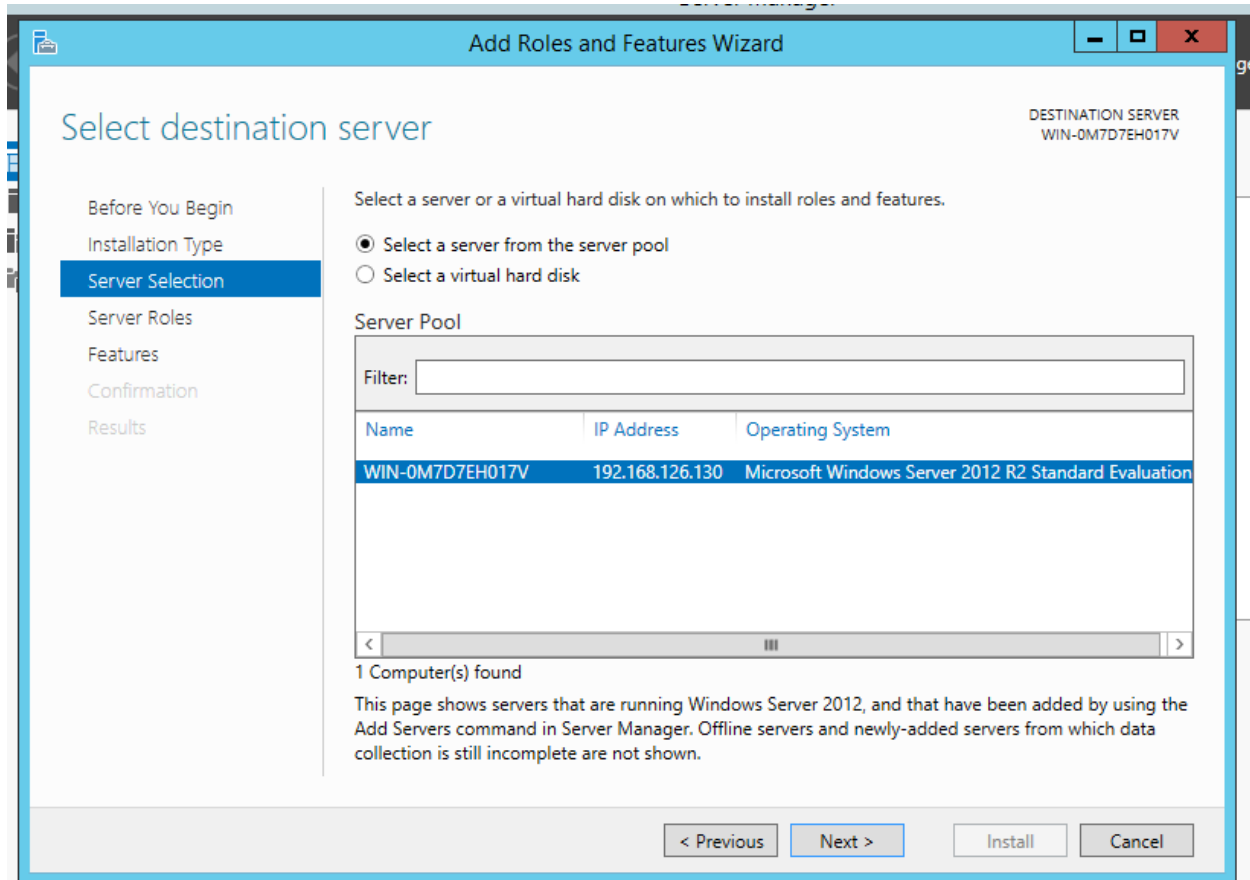


## Click on Add roles and features



## Click on the next





Add Roles and Features Wizard

DESTINATION SERVER  
WIN-0M7D7EH017V

Select server roles

Before You Begin  
Installation Type  
Server Selection  
**Server Roles**  
Features  
WDS  
    Role Services  
AD DS  
Confirmation  
Results

Select one or more roles to install on the selected server.

Roles

☐ Application Server  
☐ DHCP Server  
☐ DNS Server  
☐ Fax Server  
☒ File and Storage Services (1 of 12 installed)  
☐ Hyper-V  
☐ Network Policy and Access Services  
☐ Print and Document Services  
☐ Remote Access  
☐ Remote Desktop Services  
☐ Volume Activation Services  
☐ Web Server (IIS)  
☒ Windows Deployment Services  
☐ Windows Server Essentials Experience  
☐ Windows Server Update Services

Description

Active Directory Certificate Services (AD CS) is used to create certification authorities and related role services that allow you to issue and manage certificates used in a variety of applications.

< Previous

Next >

Install

Cancel

Add Roles and Features Wizard

DESTINATION SERVER  
WIN-0M7D7EH017V

Select features

Before You Begin  
Installation Type  
Server Selection  
Server Roles  
**Features**  
WDS  
    Role Services  
AD DS  
Confirmation  
Results

Select one or more features to install on the selected server.

Features

☐ .NET Framework 3.5 Features  
☒ .NET Framework 4.5 Features (2 of 7 installed)  
☐ Background Intelligent Transfer Service (BITS)  
☐ BitLocker Drive Encryption  
☐ BitLocker Network Unlock  
☐ BranchCache  
☐ Client for NFS  
☐ Data Center Bridging  
☐ Direct Play  
☐ Enhanced Storage  
☒ Failover Clustering  
☒ Group Policy Management  
☐ IIS Hostable Web Core  
☐ Ink and Handwriting Services

Description

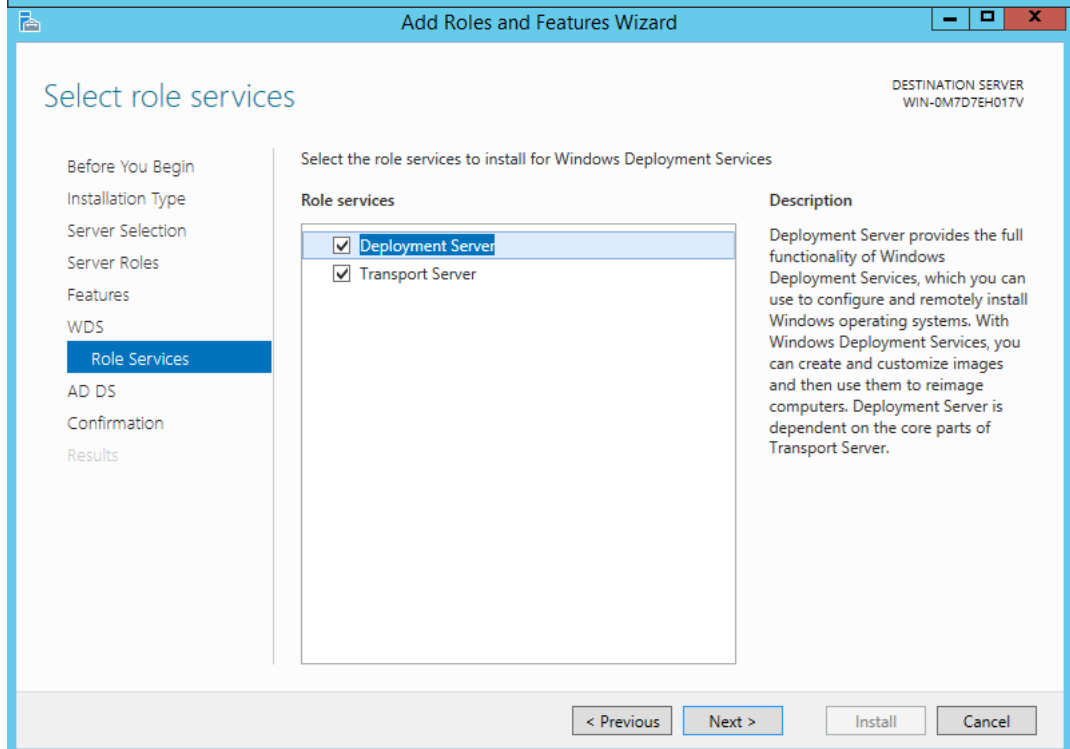
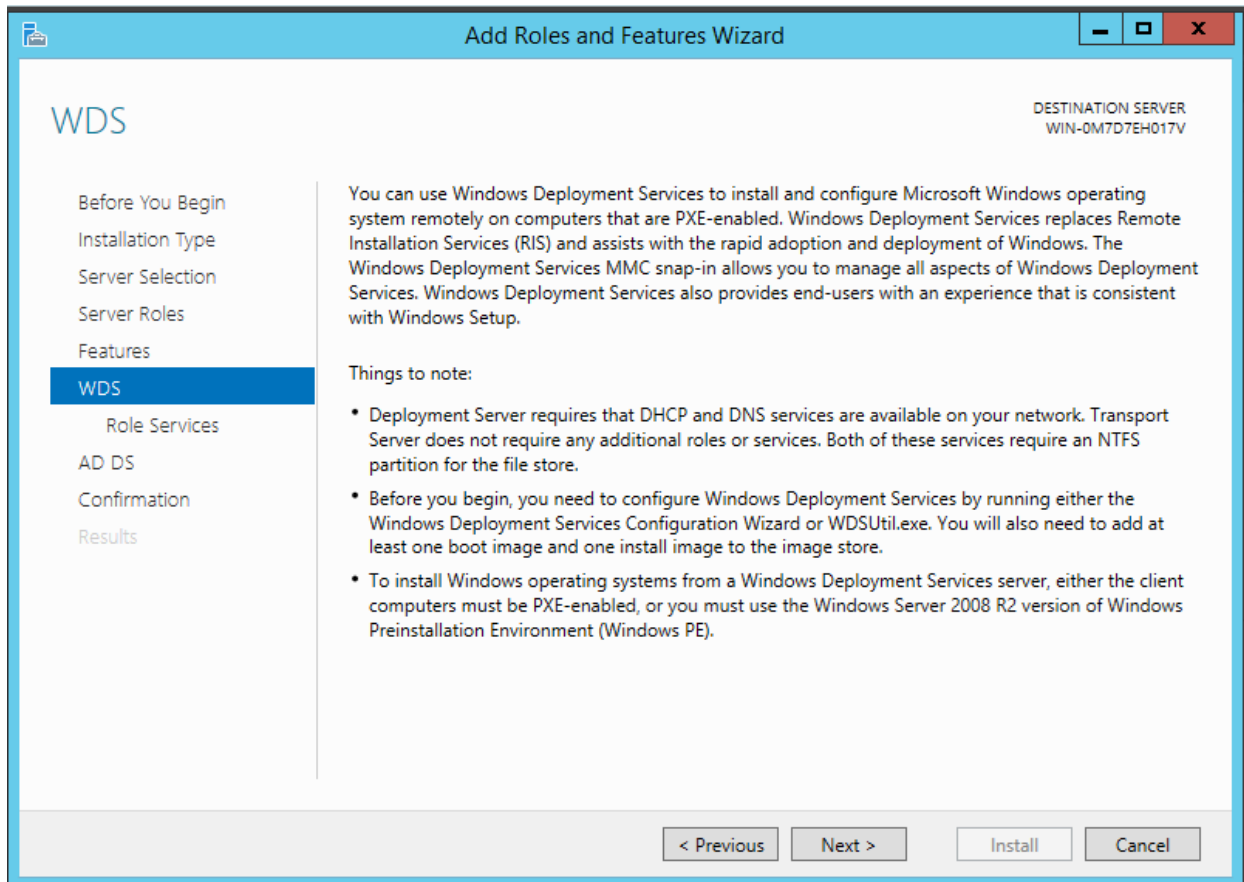
Simple TCP/IP Services supports the following TCP/IP services: Character Generator, Daytime, Discard, Echo and Quote of the Day. Simple TCP/IP Services is provided for backward compatibility and should not be installed unless it is required.

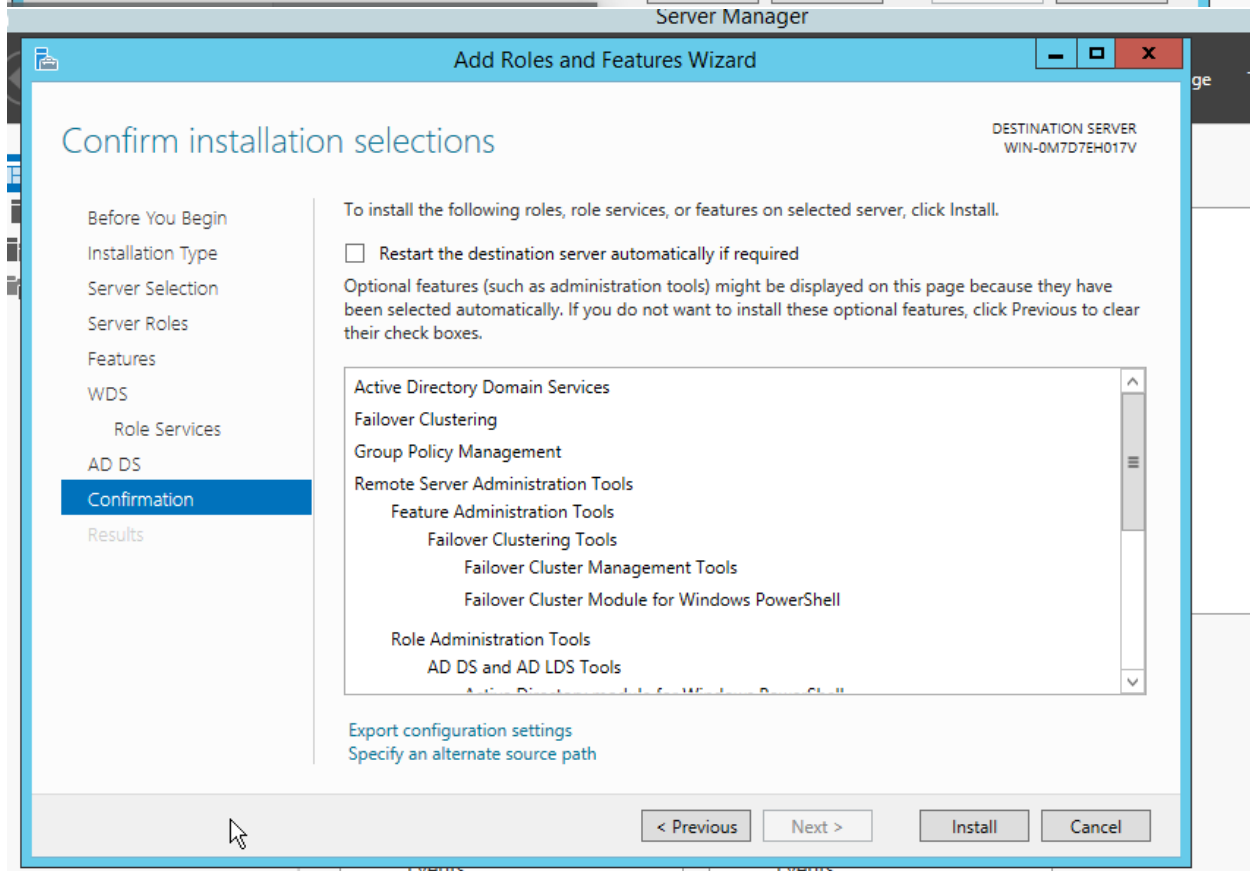
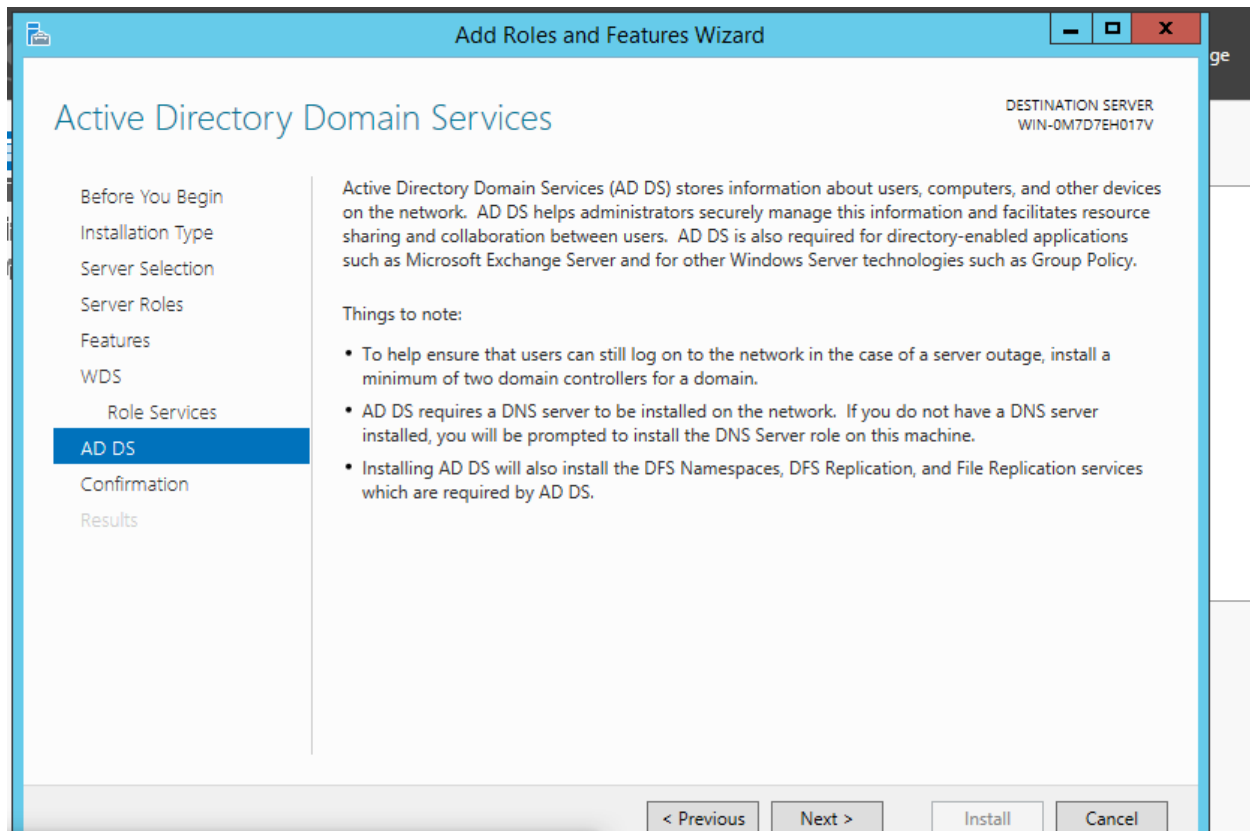
< Previous

Next >

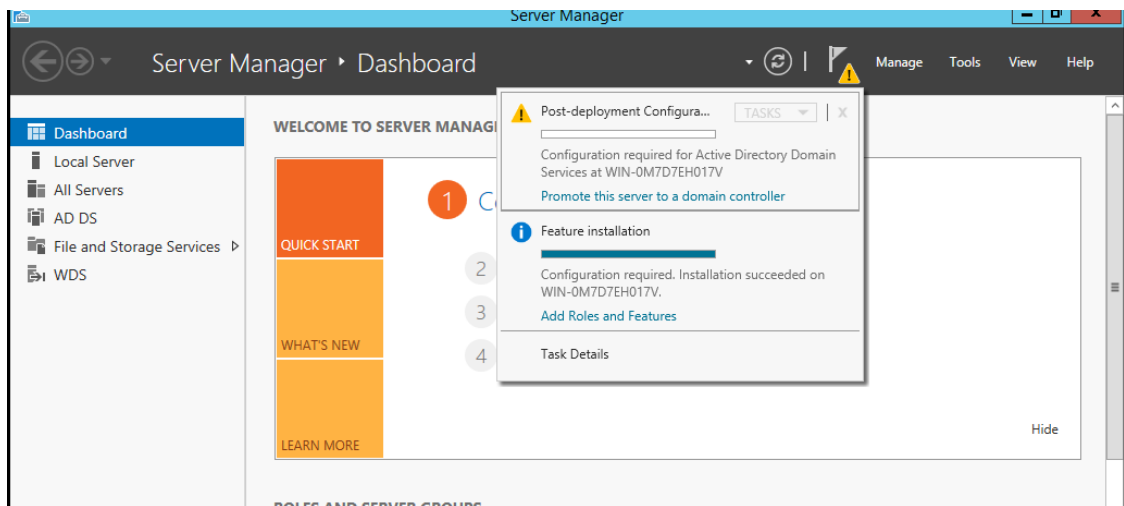
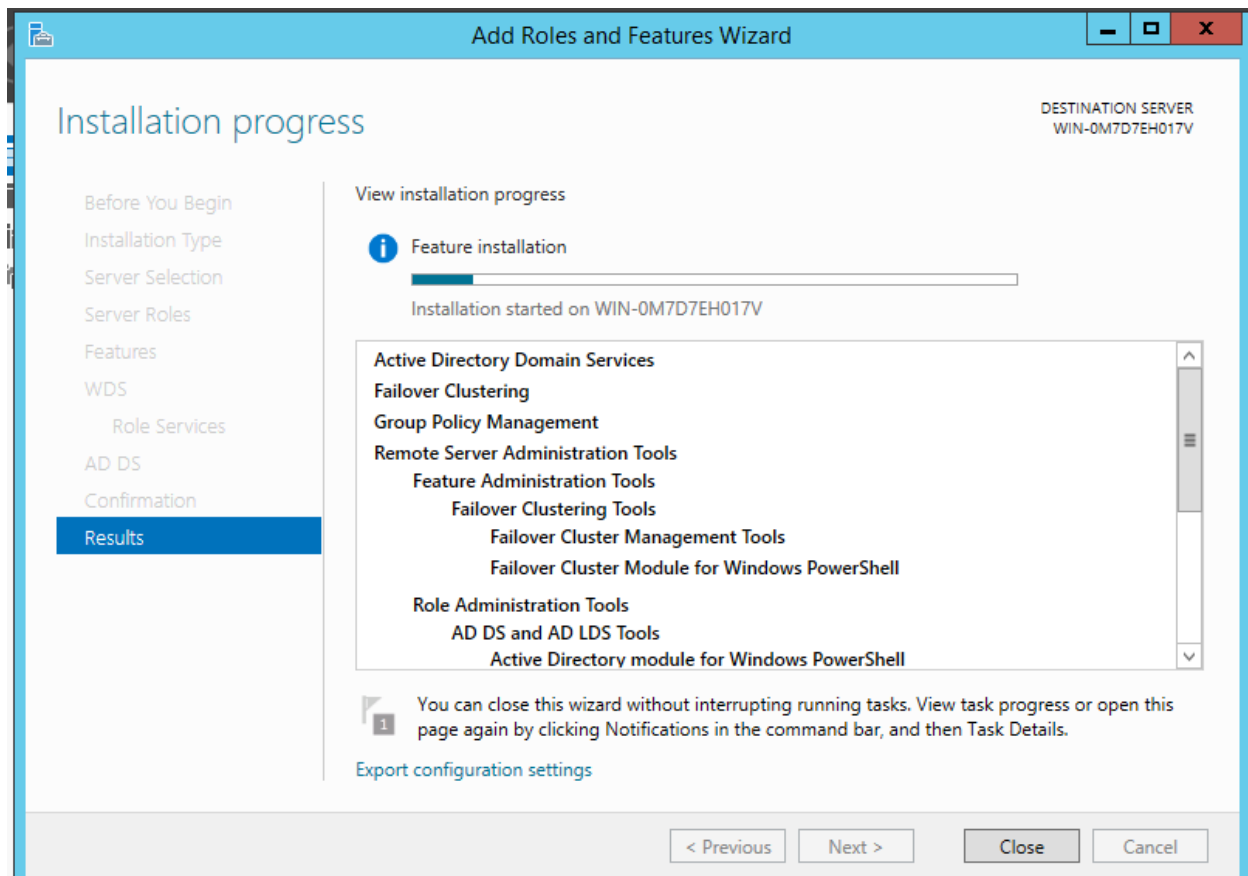
Install

Cancel









Active Directory Domain Services Configuration Wizard

Deployment Configuration

TARGET SERVER  
WIN-0M7D7EH017V

Deployment Configuration

Domain Controller Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

Select the deployment operation

☐ Add a domain controller to an existing domain

☐ Add a new domain to an existing forest

☒ Add a new forest

Specify the domain information for this operation

Root domain name:

[More about deployment configurations](#)

< Previous Next > Install Cancel

Active Directory Domain Services Configuration Wizard

Domain Controller Options

TARGET SERVER  
WIN-0M7D7EH017V

Deployment Configuration

Domain Controller Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

Select functional level of the new forest and root domain

Forest functional level:

Domain functional level:

Specify domain controller capabilities

☒ Domain Name System (DNS) server

☒ Global Catalog (GC)

☐ Read only domain controller (RODC)

Type the Directory Services Restore Mode (DSRM) password

Password:

Confirm password:

[More about domain controller options](#)

< Previous Next > Install Cancel

Active Directory Domain Services Configuration Wizard

Domain Controller Options

TARGET SERVER  
WIN-0M7D7EH017V

Deployment Configuration

Domain Controller Options

DNS Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

Select functional level of the new forest and root domain

Forest functional level: Windows Server 2012 R2

Domain functional level: Windows Server 2012 R2

Specify domain controller capabilities

☒ Domain Name System (DNS) server

☒ Global Catalog (GC)

☐ Read only domain controller (RODC)

Type the Directory Services Restore Mode (DSRM) password

Password: .....

Confirm password: .....



[More about domain controller options](#)

< Previous Next > Install Cancel

Active Directory Domain Services Configuration Wizard

DNS Options

TARGET SERVER  
WIN-0M7D7EH017V

 A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found... [Show more](#) 

Deployment Configuration

Domain Controller Options

DNS Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

Specify DNS delegation options

☐ Create DNS delegation

[More about DNS delegation](#)

< Previous Next > Install Cancel

Active Directory Domain Services Configuration Wizard

TARGET SERVER  
WIN-0M7D7EH017V

## Additional Options

Deployment Configuration  
Domain Controller Options  
DNS Options  
**Additional Options**  
Paths  
Review Options  
Prerequisites Check  
Installation  
Results

Verify the NetBIOS name assigned to the domain and change it if necessary

The NetBIOS domain name:

[More about additional options](#)

< Previous   Next >   Install   Cancel

Active Directory Domain Services Configuration Wizard

TARGET SERVER  
WIN-0M7D7EH017V

## Paths

Deployment Configuration  
Domain Controller Options  
DNS Options  
Additional Options  
**Paths**  
Review Options  
Prerequisites Check  
Installation  
Results

Specify the location of the AD DS database, log files, and SYSVOL

Database folder:  ...

Log files folder:  ...

SYSVOL folder:  ...

[More about Active Directory paths](#)

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