

Active Directory Lab Setup



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Introduction to Active Directory

The role of a directory is to store information about the objects present within it, but the Active Directory not only stores data but also provides it to the network administrators and the users of that particular domain whenever it is requested. It generally stores important information about the users, like their names, passwords, contact information, etc, and provides it to other users with authority in the same network to make use of the available information. It stores data in a structured form, hierarchically. It can have upright security with logon authentication and by having access control over the objects present in the Active Directory. For easy management, one can also implement policy-based administration.

Lab Requirements

- Virtual Machine (VMware Work Station/Player)
- [Windows Server 2016](#)
- Windows 10 Pro Operating System (Client)

Configuring Windows Server 2016

Power on your VMware, and let's begin with the installation by creating a new virtual machine from the File option. Here you will personalize your Windows system by providing it with your username and the password that you want to set. Then click on Next to proceed.

New Virtual Machine Wizard

Easy Install Information
This is used to install Windows Server 2016.

Windows product key
[- - - -]

Version of Windows to install
Windows Server 2016 Datacenter

Personalize Windows

Full name: [raj]

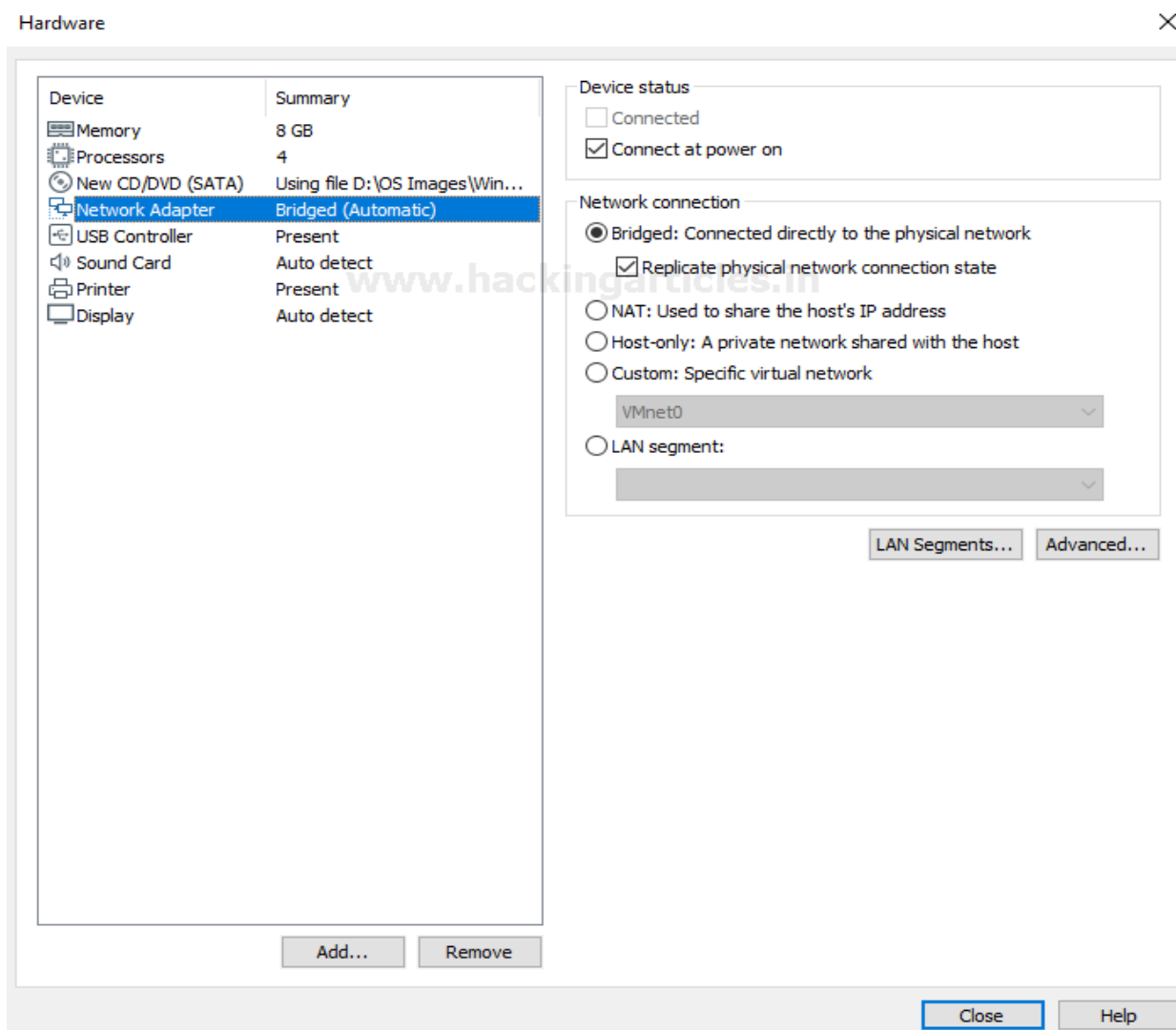
Password: [...] (optional)

Confirm: [...]

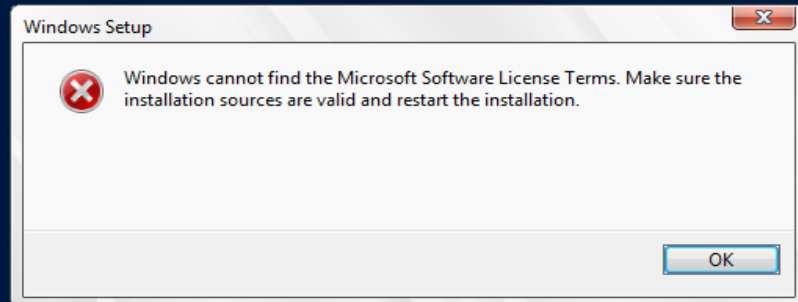
☐ Log on automatically (requires a password)

Help < Back **Next >** Cancel

Now go to Virtual Machine settings and click on Network Adapter settings and make sure that there is a bridged connection where the host system's physical network connection will be replicated. Let's close this and move ahead.

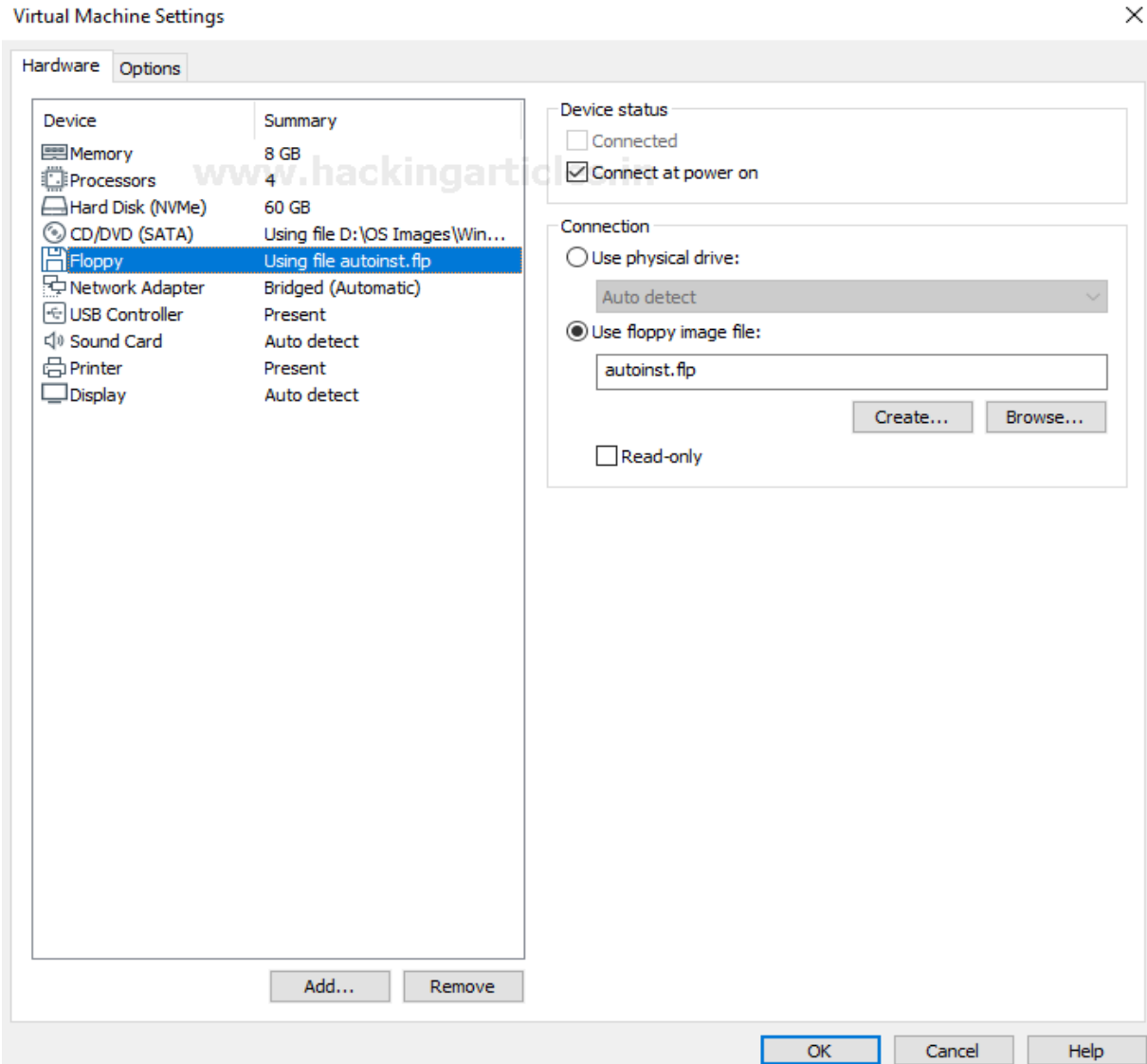


Here you see that the setup did not proceed. Let's go back and fix this error before it occurs again.

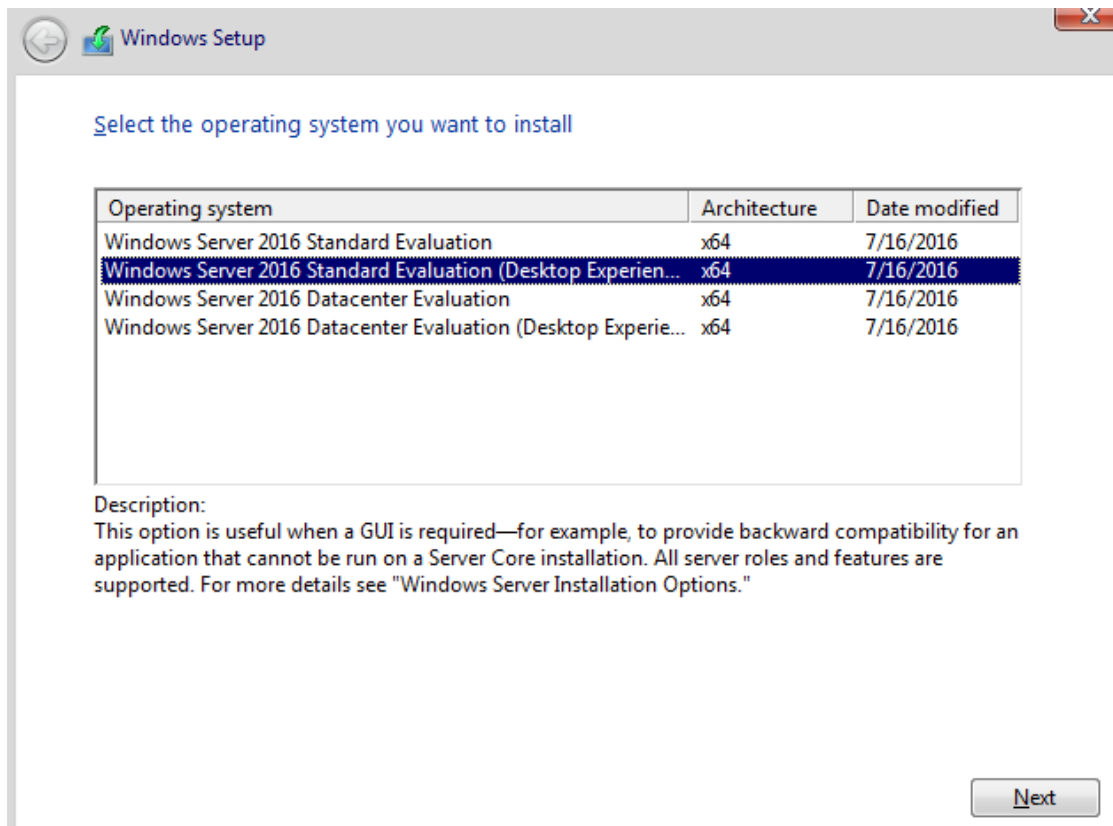


Setup is starting

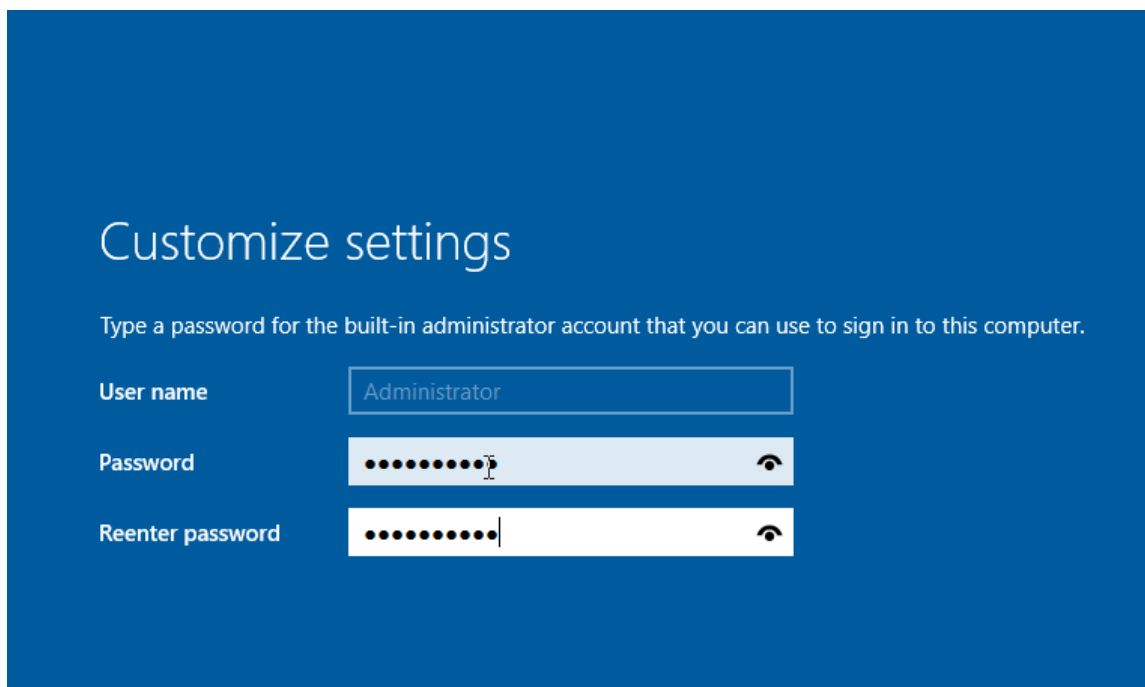
We will go back to the Virtual Machine settings and click on Floppy, there under the connection option and choose the Use floppy image file option to make it work like a charm and proceed.



Now you will select the operating system to install from the four options given below. Here we use the Standard Edition with the GUI to have a better user interface. The Desktop Edition provides many more features as compared to the server-core, as it has very limited functions. Click next to proceed.



The operating system should start installing and, under the customized setting option, enter the password you want to use for the default administrator account.



Now you see that your server is installed and ready to use. You can find all the basic details about the server under the system option of the control panel.

System

Control Panel > System and Security > System

Control Panel Home

View basic information about your computer

Device Manager

Remote settings

Advanced system settings

Windows edition

Windows Server 2016 Standard Evaluation

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Windows Server® 2016

System

Processor: Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz 3.60 GHz (2 processors)

Installed memory (RAM): 8.00 GB

System type: 64-bit Operating System, x64-based processor

Pen and Touch: No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings

Computer name: WIN-VS2VGE5G53B [Change settings](#)

Full computer name: WIN-VS2VGE5G53B

Computer description:

Workgroup: WORKGROUP

Windows activation

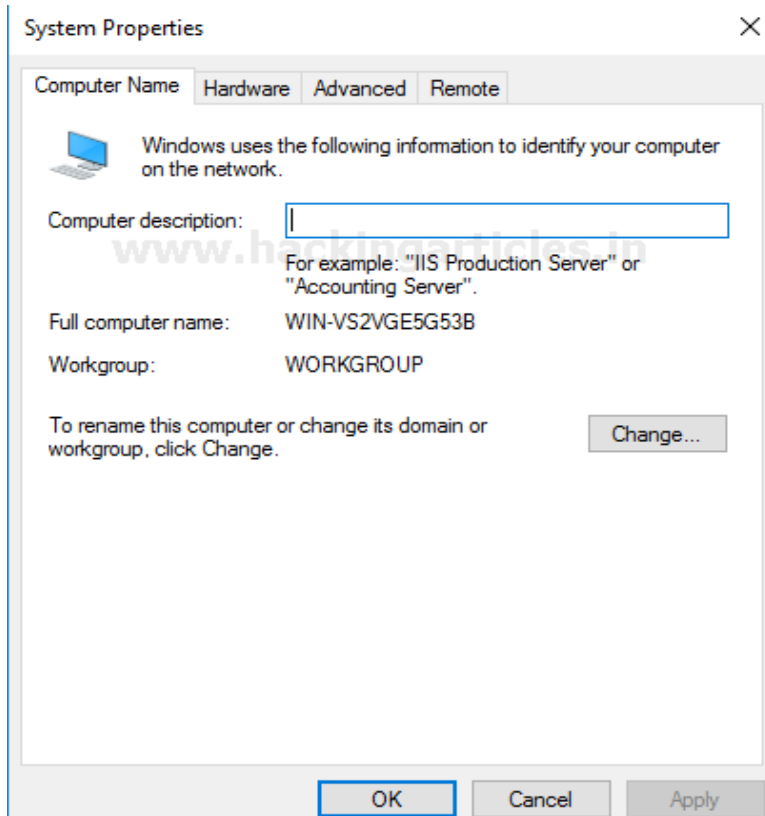
Windows is activated [Read the Microsoft Software License Terms](#)

Product ID: 00378-00000-00000-AA739 [Change product key](#)

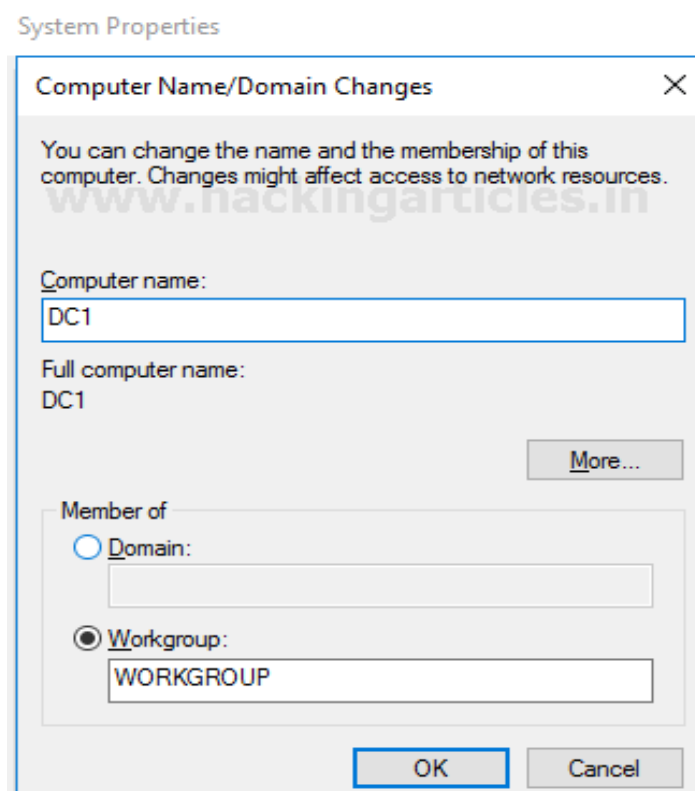
See also

Installing AD DS

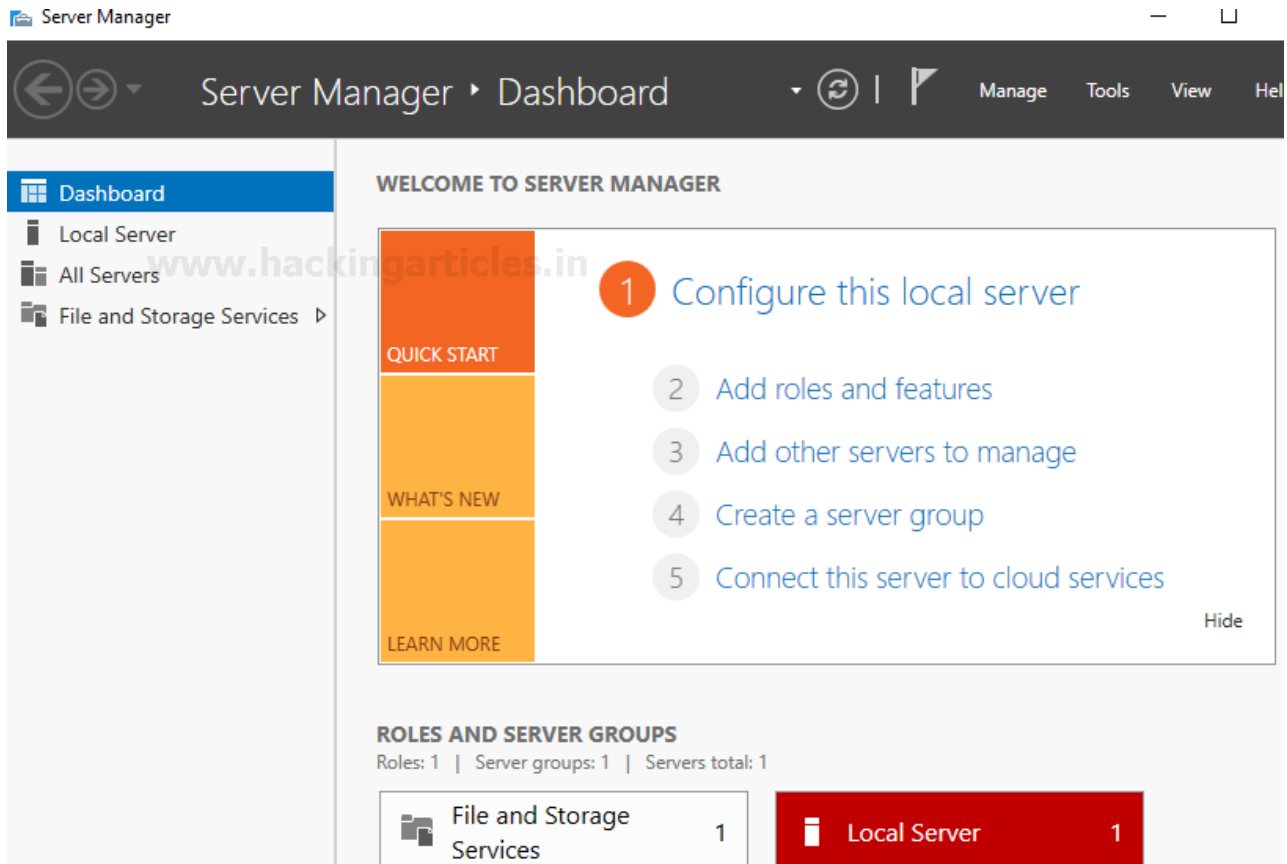
Now let us open the system properties from the 'Local Server' option and let us make changes to the domain name.



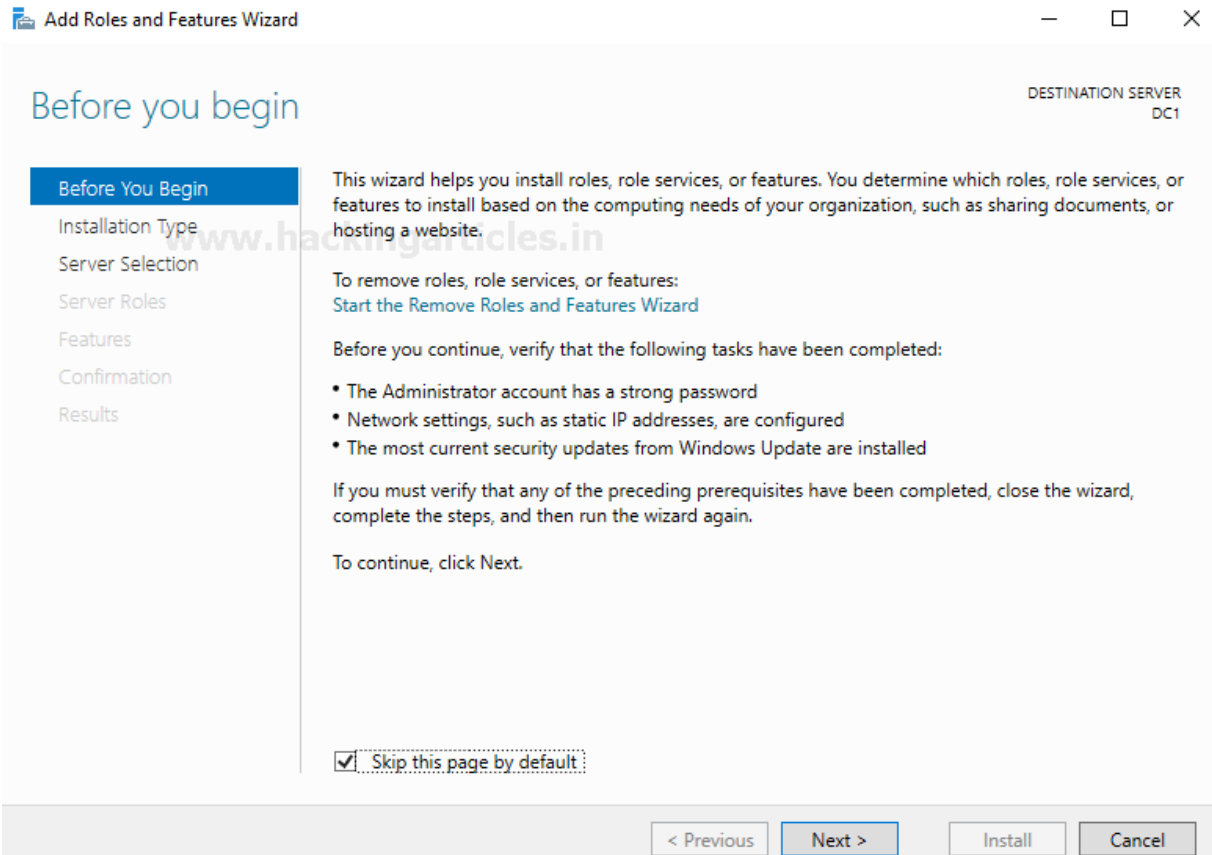
Let's keep the computer's name as **DC 1** and make it a member of the workgroup with the name "**Workgroup**". When finished, click on "OK" to proceed.



Come back to the dashboard, and now let's begin with configuring the Active Directory role. Click on the Manage option at the top of the Dashboard. Then click on 'Add roles and features.'



You see the installation wizard before you and click on 'next' to proceed.



Then select Role-based or feature-based installation as it allows you to manually configure all the preferred roles at your convenience.

Select installation type

DESTINATION SERVER
DC1

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

Select the installation type. You can install roles and features on a running physical computer or virtual machine, or on an offline virtual hard disk (VHD).

☒ **Role-based or feature-based installation**

Configure a single server by adding roles, role services, and features.

☐ **Remote Desktop Services installation**

Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment.

< Previous

Next >

Install

Cancel

Choose the server you have created from the server pool that is available to you.

Select destination server

DESTINATION SERVER
DC1

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

Select a server or a virtual hard disk on which to install roles and features.

☒ Select a server from the server pool☐ Select a virtual hard disk

Server Pool

Filter:

Name	IP Address	Operating System
DC1	192.168.1.105	Microsoft Windows Server 2016 Standard Evaluation

1 Computer(s) found

This page shows servers that are running Windows Server 2012 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.

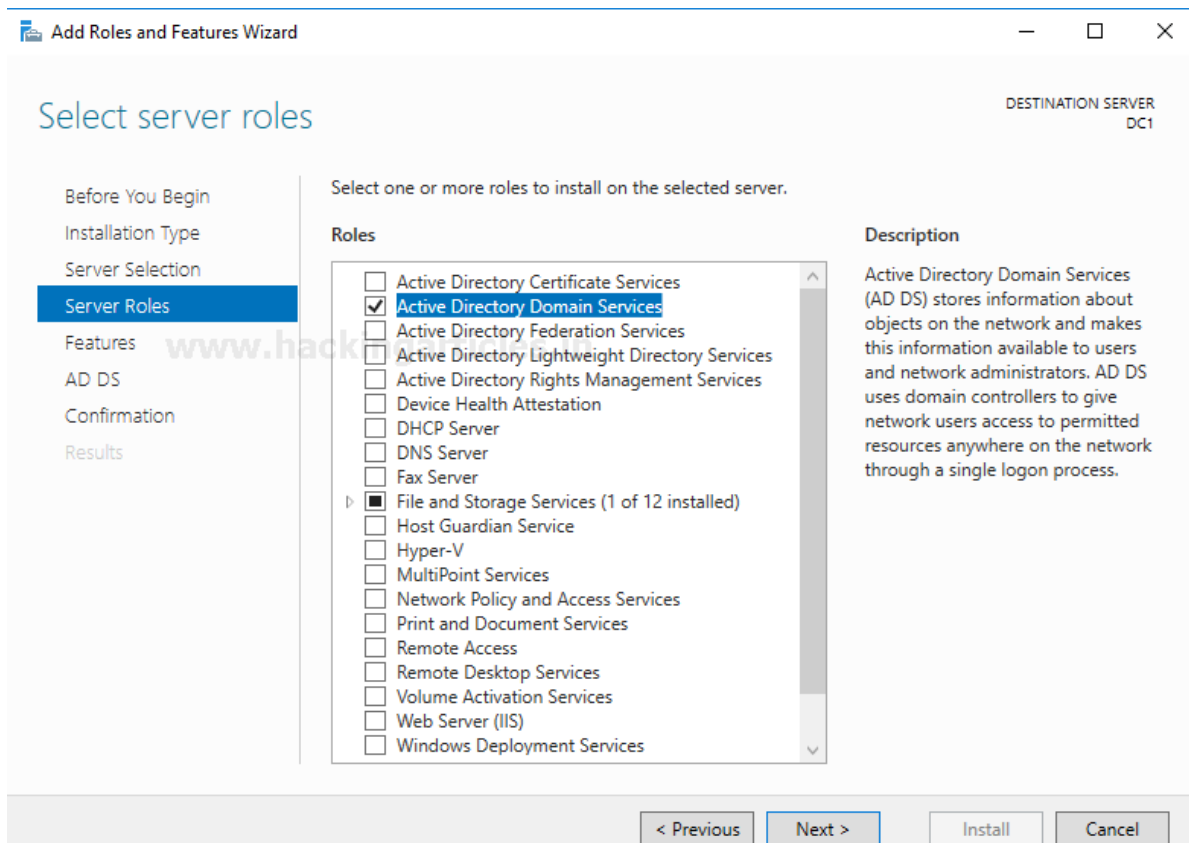
< Previous

Next >

Install

Cancel

Now choose the server roles you want to add. Here we require **Active Directory Domain Services**. We check that option and click next to proceed.



In the features installation, choose **Group Policy Management**. It is a management feature in Windows that allows you to control multiple users and computer configurations that are present in an Active Directory environment. Click on Next to proceed.

Select features

DESTINATION SERVER
DC1

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD DS

Confirmation

Results

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

Features

- ☐ .NET Framework 3.5 Features
- ☒ .NET Framework 4.6 Features (2 of 7 installed)
- ☐ Background Intelligent Transfer Service (BITS)
- ☐ BitLocker Drive Encryption
- ☐ BitLocker Network Unlock
- ☐ BranchCache
- ☐ Client for NFS
- ☐ Containers
- ☐ Data Center Bridging
- ☐ Direct Play
- ☐ Enhanced Storage
- ☐ Failover Clustering
- ☒ Group Policy Management
- ☐ I/O Quality of Service
- ☐ IIS Hostable Web Core
- ☐ Internet Printing Client
- ☐ IP Address Management (IPAM) Server
- ☐ iSNS Server service
- ☐ LPR Port Monitor

Description

.NET Framework 3.5 combines the power of the .NET Framework 2.0 APIs with new technologies for building applications that offer appealing user interfaces, protect your customers' personal identity information, enable seamless and secure communication, and provide the ability to model a range of business processes.

< Previous

Next >

Install

Cancel

Now let us confirm the selections you have made for the installation of the Active Directory Domain Server and proceed.

Confirm installation selections

DESTINATION SERVER
DC1[Before You Begin](#)[Installation Type](#)[Server Selection](#)[Server Roles](#)[Features](#)[AD DS](#)[Confirmation](#)[Results](#)

To install the following roles, role services, or features on selected server, click Install.

☐ Restart the destination server automatically if required

Optional features (such as administration tools) might be displayed on this page because they have been selected automatically. If you do not want to install these optional features, click Previous to clear their check boxes.

Active Directory Domain Services
Group Policy Management
Remote Server Administration Tools
 Role Administration Tools
 AD DS and AD LDS Tools
 Active Directory module for Windows PowerShell
 AD DS Tools
 Active Directory Administrative Center
 AD DS Snap-Ins and Command-Line Tools

[Export configuration settings](#)
[Specify an alternate source path](#)

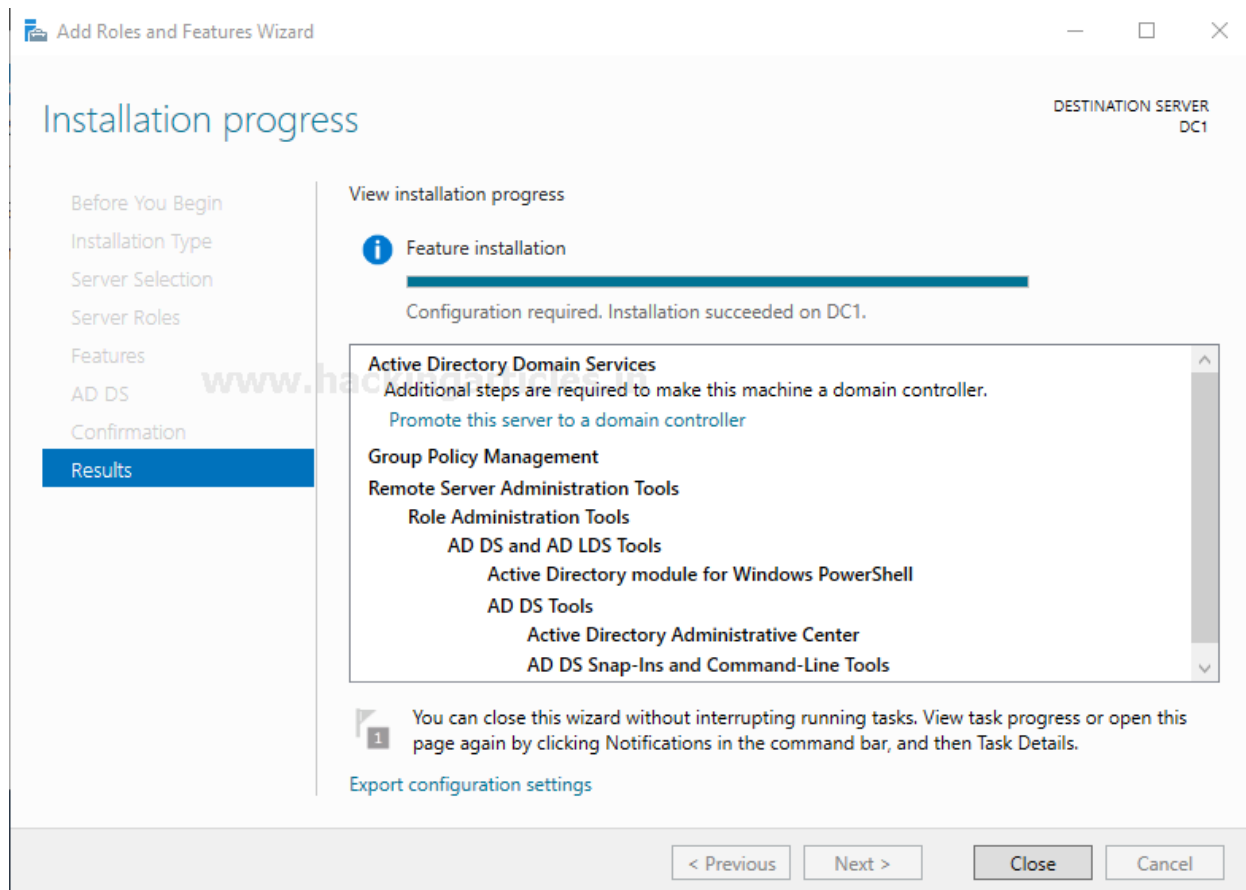
< Previous

Next >

Install

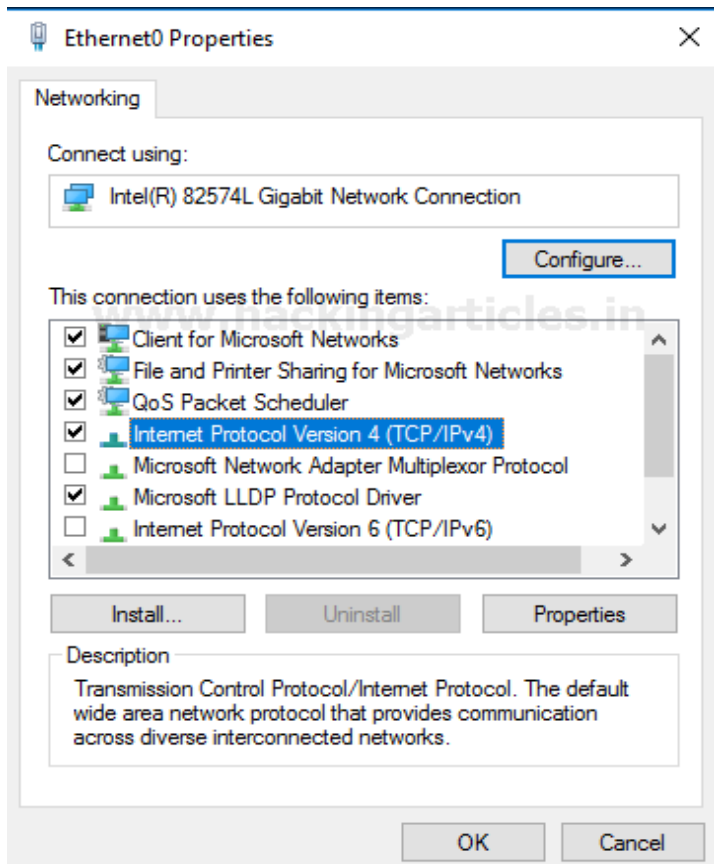
Cancel

Let us wait for the installation to be completed and close the window when it is ready.



Network Configurations

Enable the ethernet connection and click on Properties. Double click on Internet Protocol Version TCP/IPv4.



Now assign the static IP address and the subnet mask will be automatically assigned. Also, assign the default gateway. Then assign the DNS Server address.

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address: 192 . 168 . 1 . 105

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 1 . 1

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: 192 . 168 . 1 . 105

Alternate DNS server: . . .

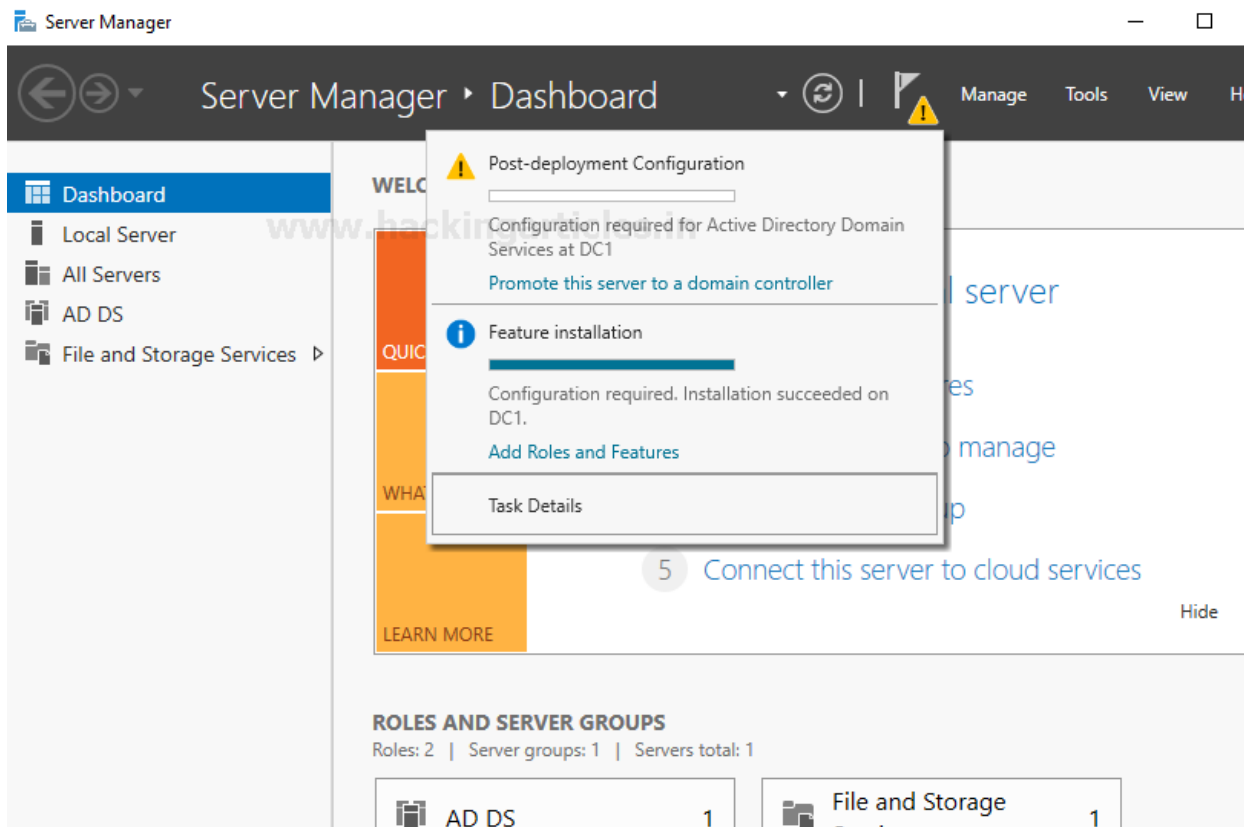
☐ Validate settings upon exit

Advanced...

OK Cancel

Post-Deployment Configurations

Once the AD DS feature installation is completed, you will see a flag notification, so let us move on to the configurations that are required in the post-deployment phase. To proceed, click on Promote this server to a domain controller.



In Deployment Configuration let's create a new forest with the root domain name as **ignite.local**. A forest in the Active Directory is of the highest level of organization. Each forest has the potential to share a single database, a global address list, and security boundaries. Therefore, by default one user or even for that matter an administrator belonging to one forest cannot make use of another forest.

The screenshot shows the 'Active Directory Domain Services Configuration Wizard' window. The title bar includes the text 'Active Directory Domain Services Configuration Wizard' and standard window controls. The main window has a title 'Deployment Configuration' in the top left and 'TARGET SERVER DC1' in the top right. On the left is a vertical navigation pane with the following items: 'Deployment Configuration' (highlighted in blue), 'Domain Controller Options', 'Additional Options', 'Paths', 'Review Options', 'Prerequisites Check', 'Installation', and 'Results'. The main content area is titled 'Select the deployment operation' and contains three radio button options: 'Add a domain controller to an existing domain', 'Add a new domain to an existing forest', and 'Add a new forest' (which is selected). Below these options is a section titled 'Specify the domain information for this operation' with a label 'Root domain name:' and a text box containing 'ignite.local'. At the bottom of the main content area is a link that says 'More about deployment configurations'. The bottom of the window features a navigation bar with four buttons: '< Previous', 'Next >' (highlighted in blue), 'Install', and 'Cancel'.

Now let's configure the domain controller capabilities by checking the first two boxes, which allow DNS server and Global Catalog. Also, enter the Directory Services Restore Mode password, which is a safe mode booting method for Windows Server domain controllers. The domain functional level will depend on the forest functional level. Click on Next to proceed.

Domain Controller Options

TARGET SERVER
DC1

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 2016

Domain functional level: Windows Server 2016

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](#)

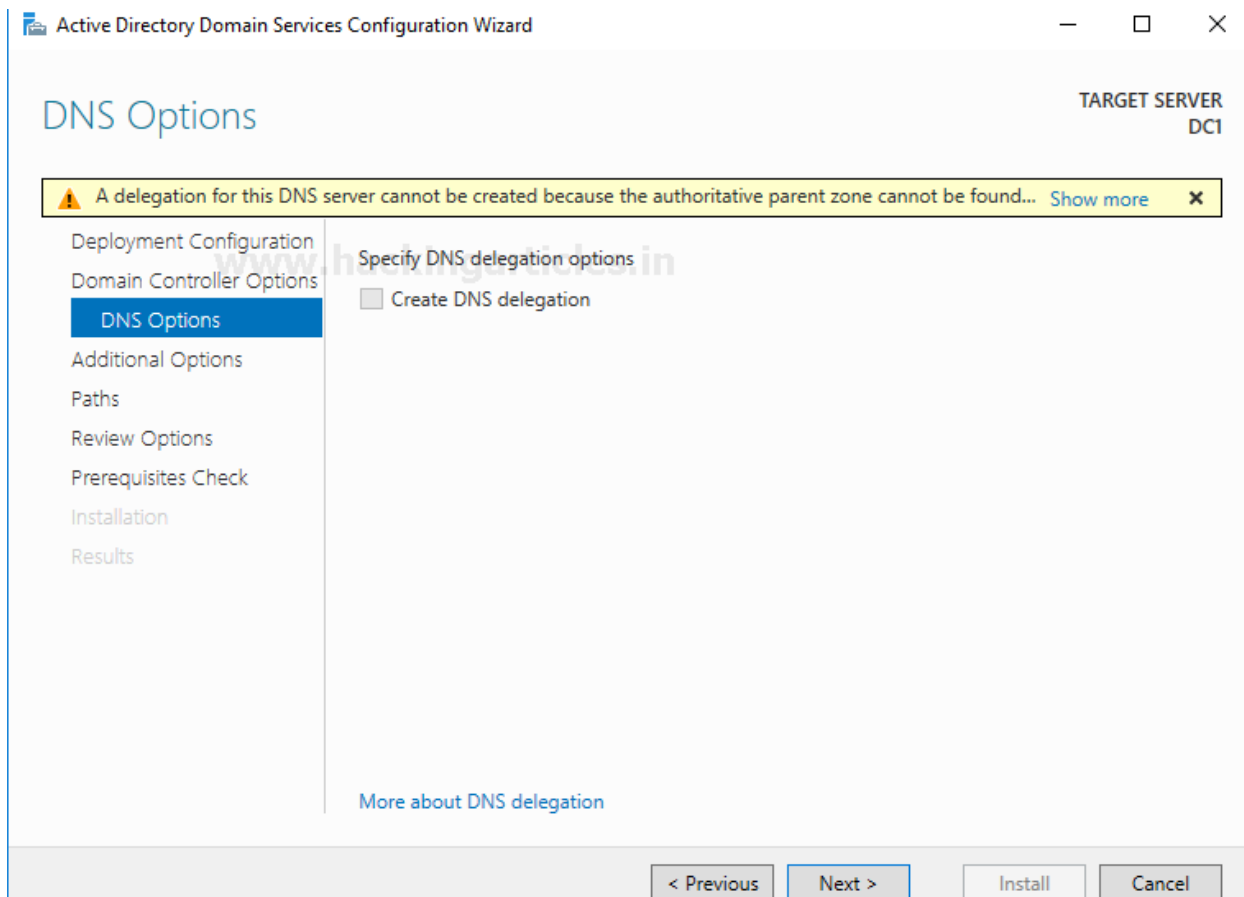
< Previous

Next >

Install

Cancel

You can skip this option and click on Next.



In the additional option, you can verify your NetBIOS name as entered prior to proceeding.

Additional Options

TARGET SERVER
DC1

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:

IGNITE

[More about additional options](#)

< Previous

Next >

Install

Cancel

Mention the path for creating an AD DS database, log files, and SYSVOL storage and proceed.

Paths

TARGET SERVER
DC1

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:

C:\Windows\NTDS



Log files folder:

C:\Windows\NTDS



SYSVOL folder:

C:\Windows\SYSVOL

[More about Active Directory paths](#)

< Previous

Next >

Install

Cancel

Check that all the specifications that you have set are correct and install the configuration. On finishing the installation, the server will reboot itself and ask you to log in again.

Prerequisites Check

TARGET SERVER
DC1

✓ All prerequisite checks passed successfully. Click 'Install' to begin installation.

[Show more](#) ×

Deployment Configuration

Domain Controller Options

DNS Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

Prerequisites need to be validated before Active Directory Domain Services is installed on this computer

[Rerun prerequisites check](#)

⬆ View results

⚠ Windows Server 2016 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.

For more information about this setting, see Knowledge Base article 942564 (<http://go.microsoft.com/fwlink/?LinkId=104751>).

⚠ A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside the domain "ignite.local". Otherwise, no action is required.

⚠ If you click Install, the server automatically reboots at the end of the promotion operation.

[More about prerequisites](#)

< Previous

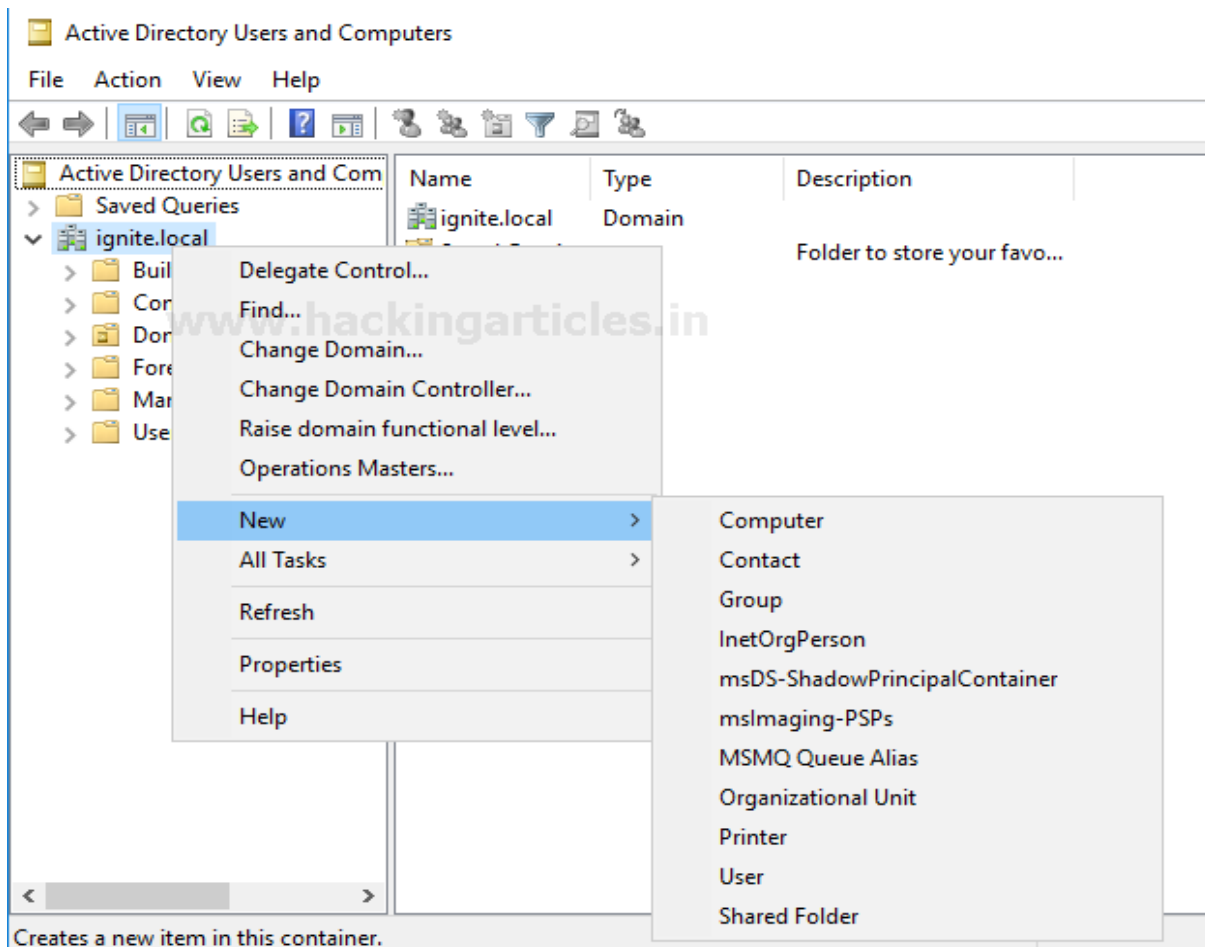
Next >

Install

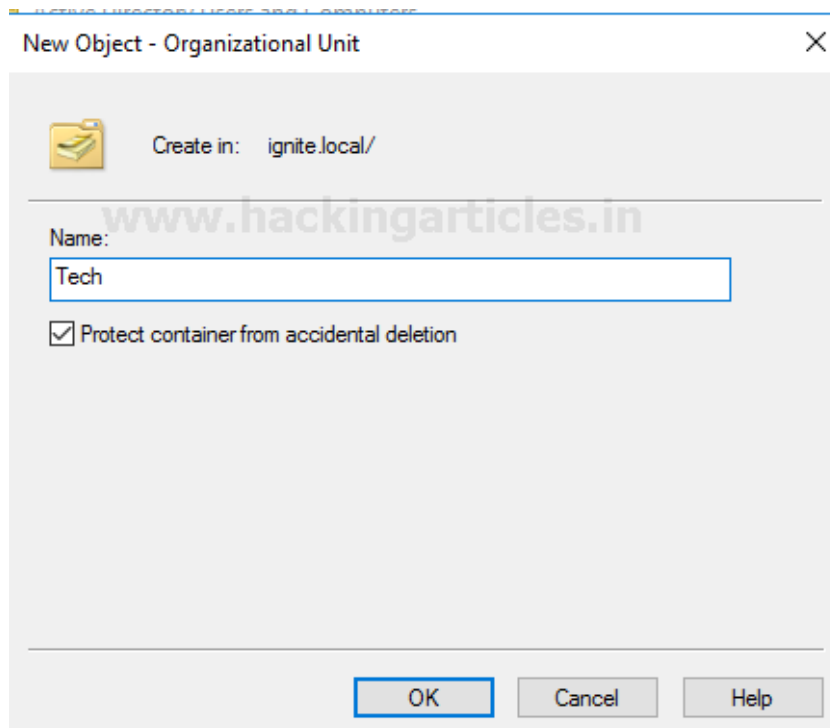
Cancel

Create OU and user

Now let us proceed to create users in our Active Directory by clicking on **Tools/Active Directory Users and Computers**. It will open a new window; click on the domain name you have created and then click on **New/Organisational Unit**.



A new window will appear to create a new object. You can name it as per your requirements and procedures.



New Object - Organizational Unit [X]

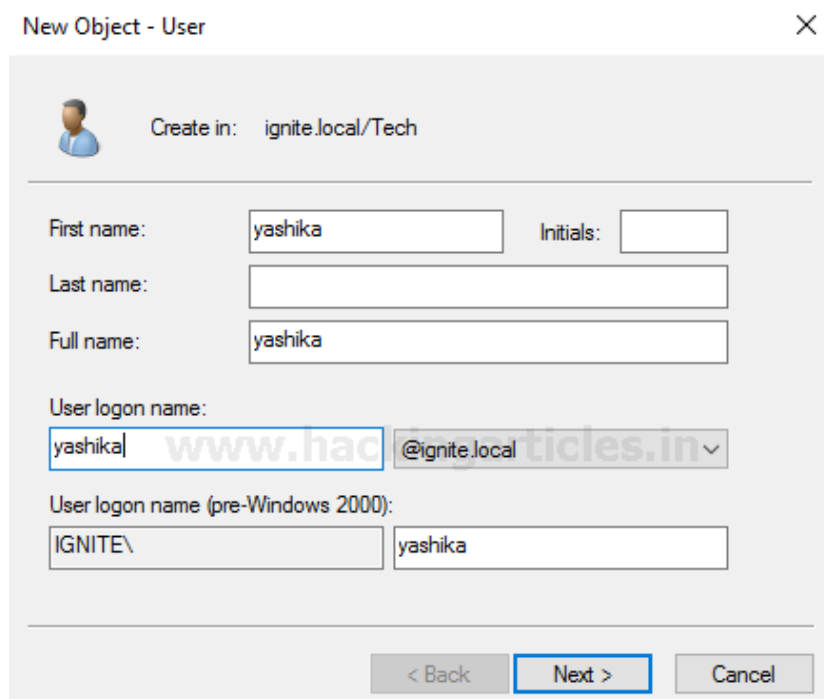
Create in: ignite.local/

Name:

☒ Protect container from accidental deletion

OK Cancel Help

A window to create a new object that is a user will appear. Enter all the required details for the user and proceed.



New Object - User [X]

Create in: ignite.local/Tech

First name: Initials:

Last name:

Full name:

User logon name: @ignite.local

User logon name (pre-Windows 2000):

< Back Next > Cancel

Enter the password for the newly created user and then proceed ahead. Voila! Your user has been created.

New Object - User

Create in: ignite.local/Tech

Password:

Confirm password:

☐ User must change password at next logon

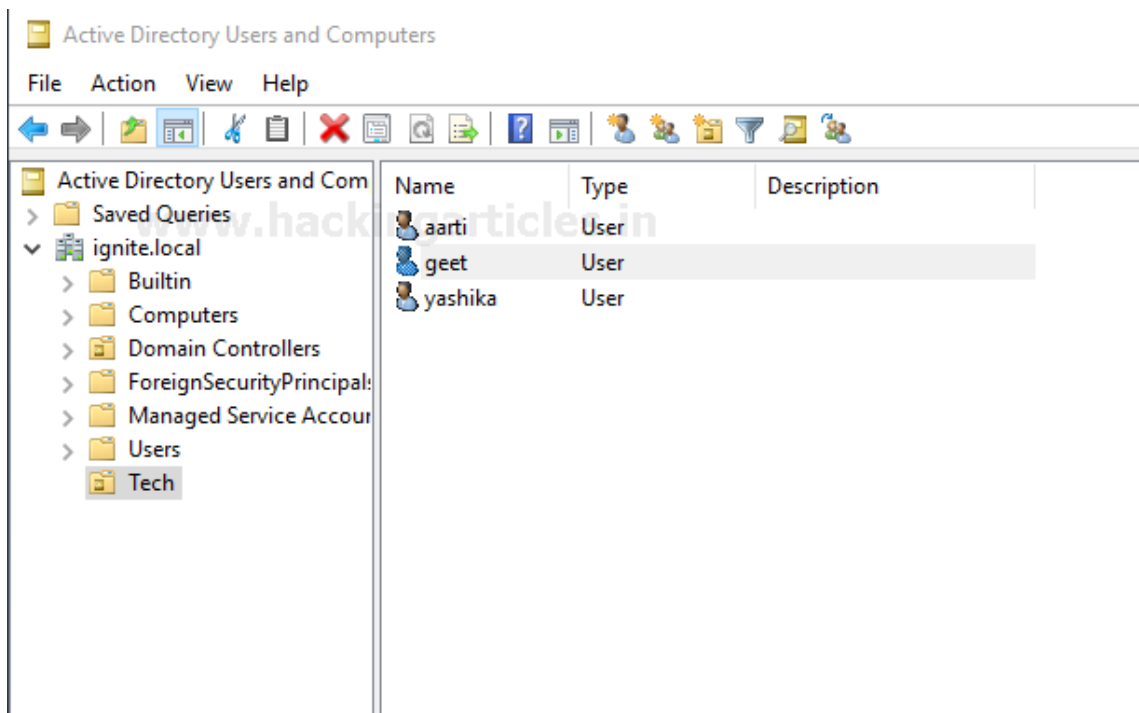
☐ User cannot change password

☒ Password never expires

☐ Account is disabled

< Back Next > Cancel

Subsequently, you can create multiple users under an organizational unit.



Add Client to the Domain

Here on the Windows 10 system, before connecting it to the domain, we have to set a static IP for the system and mention the IP address of the Domain Controller in the DNS server address.

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address: 192 . 168 . 1 . 104

Subnet mask: 255 . 255 . 255 . 0

Default gateway: 192 . 168 . 1 . 1

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server: 192 . 168 . 1 . 105

Alternate DNS server: . . .

☐ Validate settings upon exit

Advanced...

OK Cancel

Go to the **control panel** and check the basic information of your system and change the computer name settings.

System

Control Panel > System and Security > System

Search Control Panel

Control Panel Home

View basic information about your computer

Windows edition

Windows 10 Pro
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System

Manufacturer: VMware

Processor: Intel(R) Core(TM) i7-7700 CPU @ 3.60GHz 3.60 GHz

Installed memory (RAM): 2.00 GB

System type: 64-bit Operating System, x64-based processor

Pen and Touch: No Pen or Touch Input is available for this Display

VMware support

Website: [Online support](#)

Computer name, domain, and workgroup settings

Computer name: DESKTOP-TT14AQK [Change settings](#)

Full computer name: DESKTOP-TT14AQK

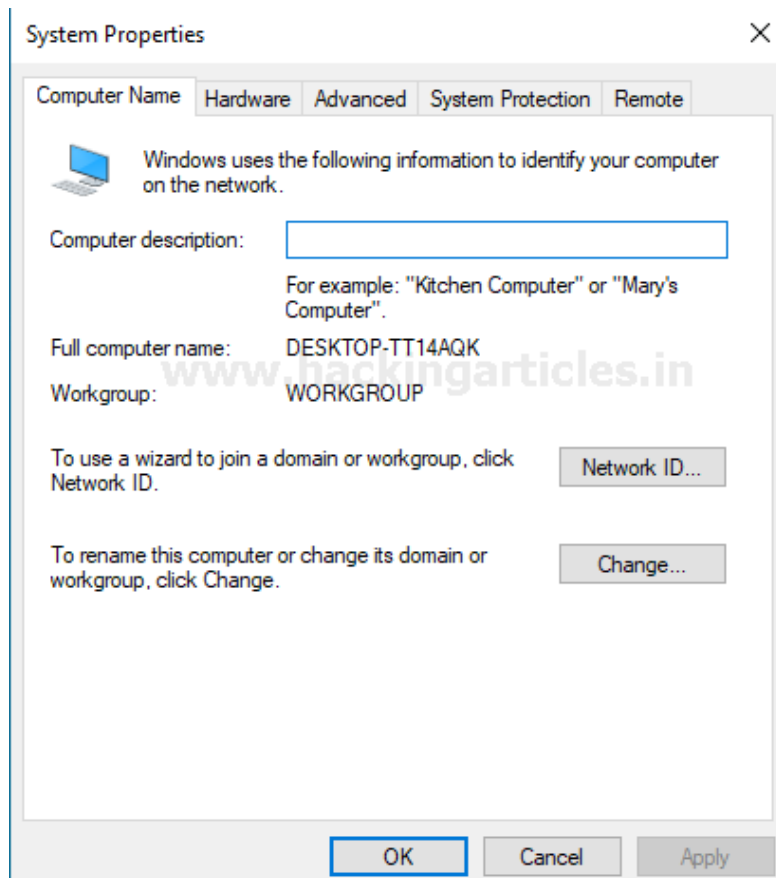
Computer description:

Workgroup: WORKGROUP

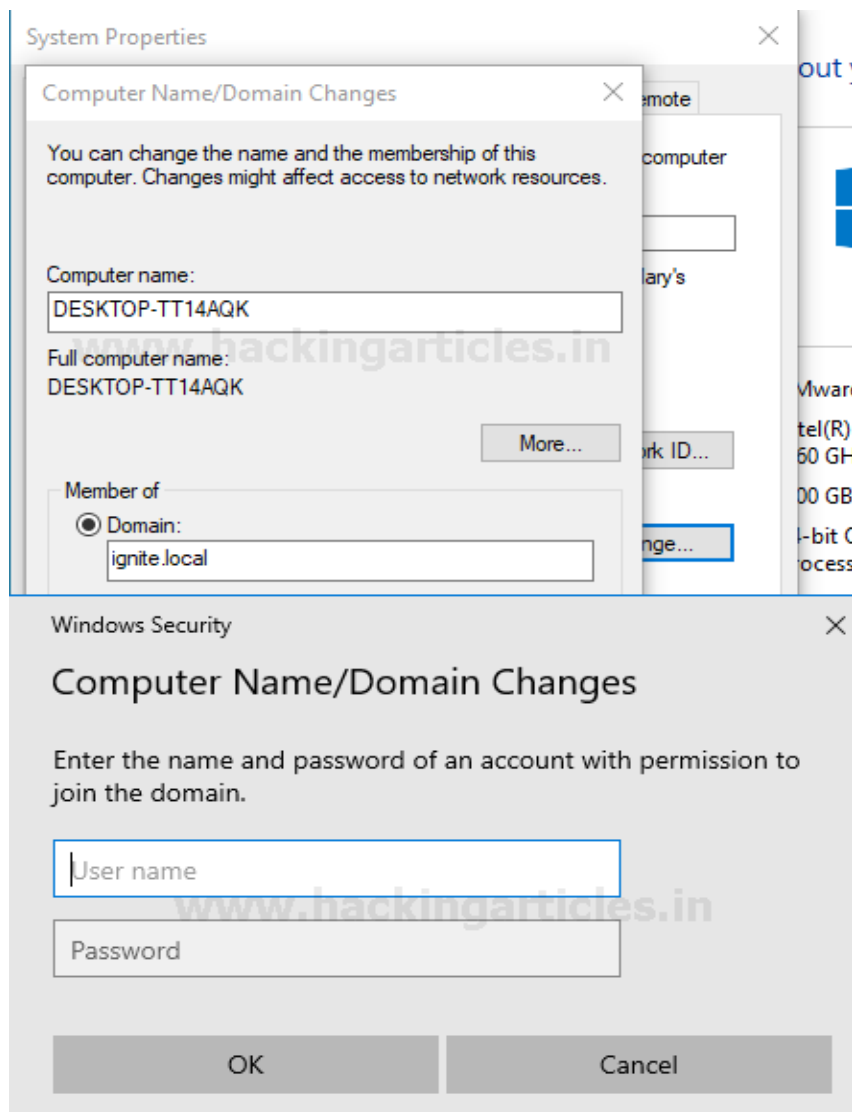
See also

Windows activation

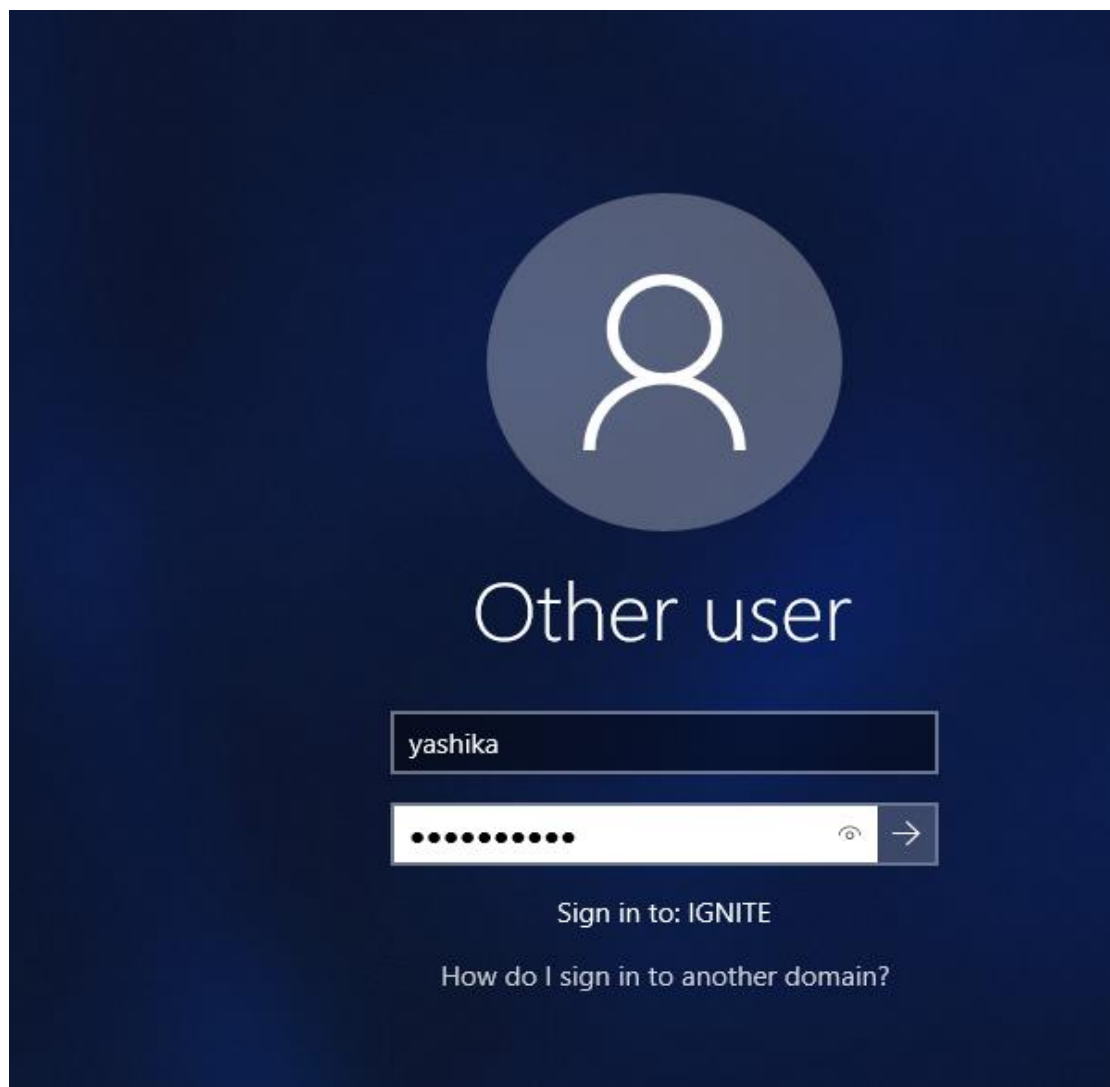
Now click on the "change" option to join the domain.



It will display your computer name, and click on the domain under the member, and you will be prompted to enter the username and password of the domain change that you are making.



Once, you are done with this, restart your system and you can log in with your username and password to sign in under the domain that you had previously created.



After logging in, you can open the command prompt and go to the directory in which your user is present. Make use of the net user command and mention the user's name with the domain. You will get details about the user.

```
net user yashika /domain
```

```
C:\Users\yashika>net user yashika /domain
The request will be processed at a domain controller for domain ignite.local.

User name                yashika
Full Name                yashika
Comment
User's comment
Country/region code      000 (System Default)
Account active           Yes
Account expires          Never

Password last set        [ 7/ ] 5/ [ 2020 4:01:49 AM
Password expires         Never
Password changeable      [ 7/ ] 6/ [ 2020 4:01:49 AM
Password required        Yes
User may change password Yes

Workstations allowed     All
Logon script
User profile
Home directory
Last logon               [ 7/ ] 5/ [ 2020 4:07:02 AM

Logon hours allowed      All

Local Group Memberships
Global Group memberships *Domain Users
The command completed successfully.

C:\Users\yashika>
```