

Step by Step Domain Controller in Windows Server 2019 Preview Ed

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Table of Contents

| | |
|---|----|
| About Author | 3 |
| LAB Setup of Server 2019..... | 4 |
| Software Requirement..... | 4 |
| Hardware Requirement | 4 |
| Server 2019 Server Properties | 5 |
| Server Manager Properties..... | 5 |
| Deployment Configuration of Domain..... | 10 |
| Exploring Active Directory | 14 |
| DNS Configurations..... | 15 |
| Reverse Lookup Configuration..... | 20 |

About Author

Shakir is IT Consultant with over 13 years of extensive experience working with Microsoft Technologies AD, Exchange, O365, Windows Azure, PowerShell, Skype for Business, SQL, SharePoint and Microsoft public clouds, and providing solutions to different local & international Enterprise customers.

Shakir has been involved in Infrastructure Designing and Implementation, Virtualization, and Disaster Recovery. Extensive hands-on experience in Core Server Infrastructure, Cloud Computing, Virtualization/ Management and Information Protection. Analysis and Support of Microsoft Windows Server based Client / Server network, AD, Messaging, Skype for Business, SQL Always ON, Virtualization and System Center Infrastructure Products. Shakir has various industry certifications: MCT, MCTS, MCITP, MCSA, MCSE: Messaging, MCPS, MCSE: Cloud Platform and Infrastructure and also providing trainings on Microsoft Based Technologies.

LAB Setup of Server 2019

As Microsoft has release new Windows Server 2019 with more enhanced features and security related stuff. We have preview editions available to take a look and drive it look more in depth.

In today Lab we will see the installation of Windows Server 2019 Preview Edition as Domain Controller.

More details about Windows Server is here.

<https://cloudblogs.microsoft.com/windowsserver/2018/03/20/introducing-windows-server-2019-now-available-in-preview/>

Software Requirement

You can download preview edition of Server 2019 from Microsoft in ISO format.

Hardware Requirement

In this lab environment, we have following VM specifications.

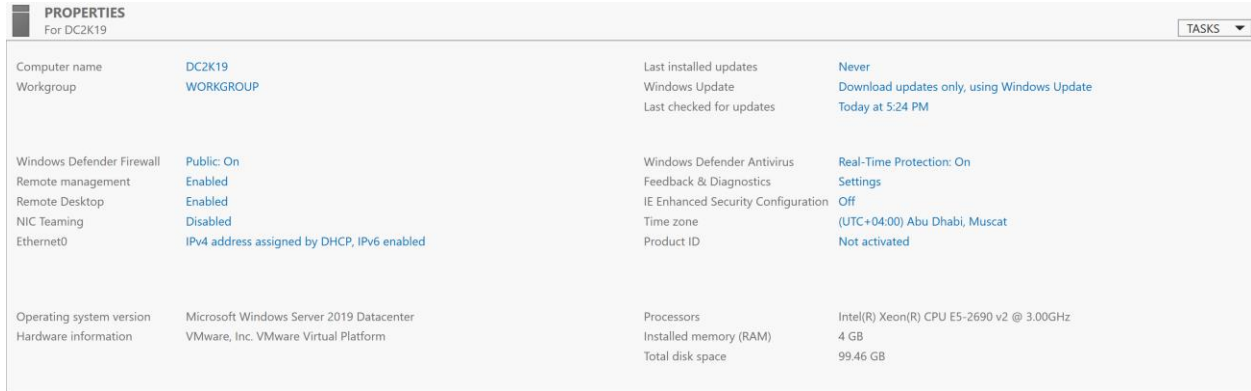
- 4 GB RAM
- 2 Core vCPU
- 100 GB HDD
- 1 NIC Card with Static IP Address

You can enable internet access on this machines for windows updates.

Let's start installation from Server Manager. We have already cover Server Name IP Address and other setting so basic setting will be cover in this article.

Server 2019 Server Properties

Here you can have a look to the basic setting such as time zone, IE security settings, firewall and remote desktop with server name etc.

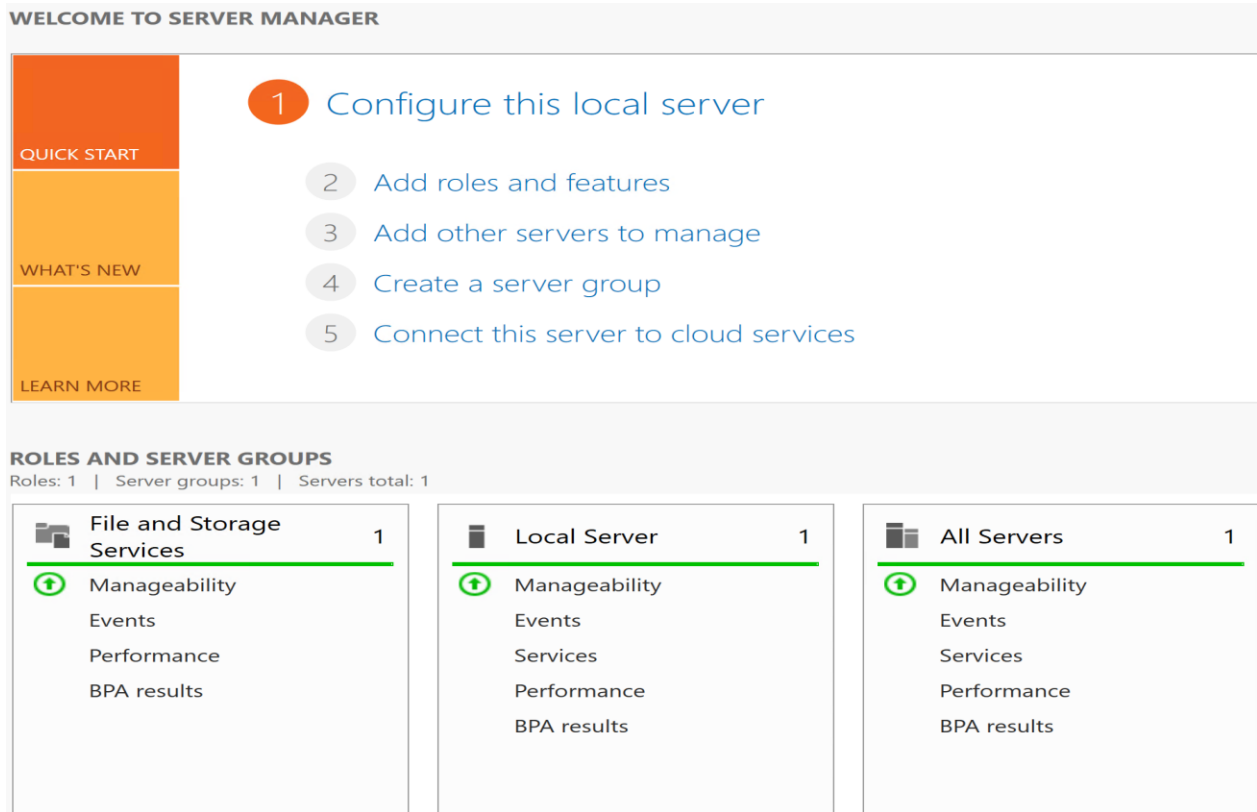


The screenshot shows the 'PROPERTIES' window for 'DC2K19'. It is divided into several sections:

- Computer name:** DC2K19, Workgroup: WORKGROUP
- Last installed updates:** Never, Windows Update, Last checked for updates: Today at 5:24 PM
- Windows Defender Firewall:** Public: On, Enabled
- Remote management:** Enabled
- Remote Desktop:** Enabled
- NIC Teaming:** Disabled
- Ethernet0:** IPv4 address assigned by DHCP, IPv6 enabled
- Windows Defender Antivirus:** Real-Time Protection: On, Settings
- IE Enhanced Security Configuration:** Off
- Time zone:** (UTC+04:00) Abu Dhabi, Muscat
- Product ID:** Not activated
- Operating system version:** Microsoft Windows Server 2019 Datacenter
- Hardware information:** VMware, Inc. VMware Virtual Platform
- Processors:** Intel(R) Xeon(R) CPU E5-2690 v2 @ 3.00GHz
- Installed memory (RAM):** 4 GB
- Total disk space:** 99.46 GB

Server Manager Properties

Click on Add roles and features



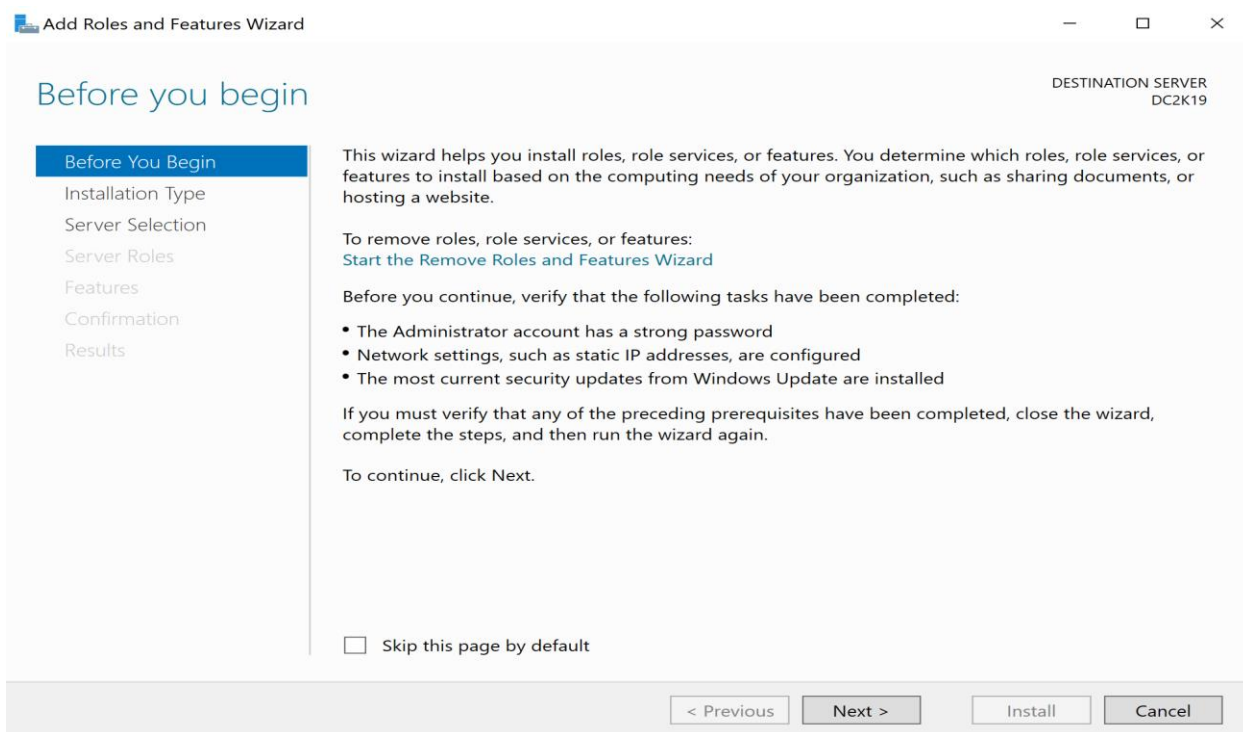
The screenshot shows the 'WELCOME TO SERVER MANAGER' screen. It features a 'QUICK START' sidebar with 'WHAT'S NEW' and 'LEARN MORE' sections. The main content area lists five steps:

- 1 Configure this local server
- 2 Add roles and features
- 3 Add other servers to manage
- 4 Create a server group
- 5 Connect this server to cloud services

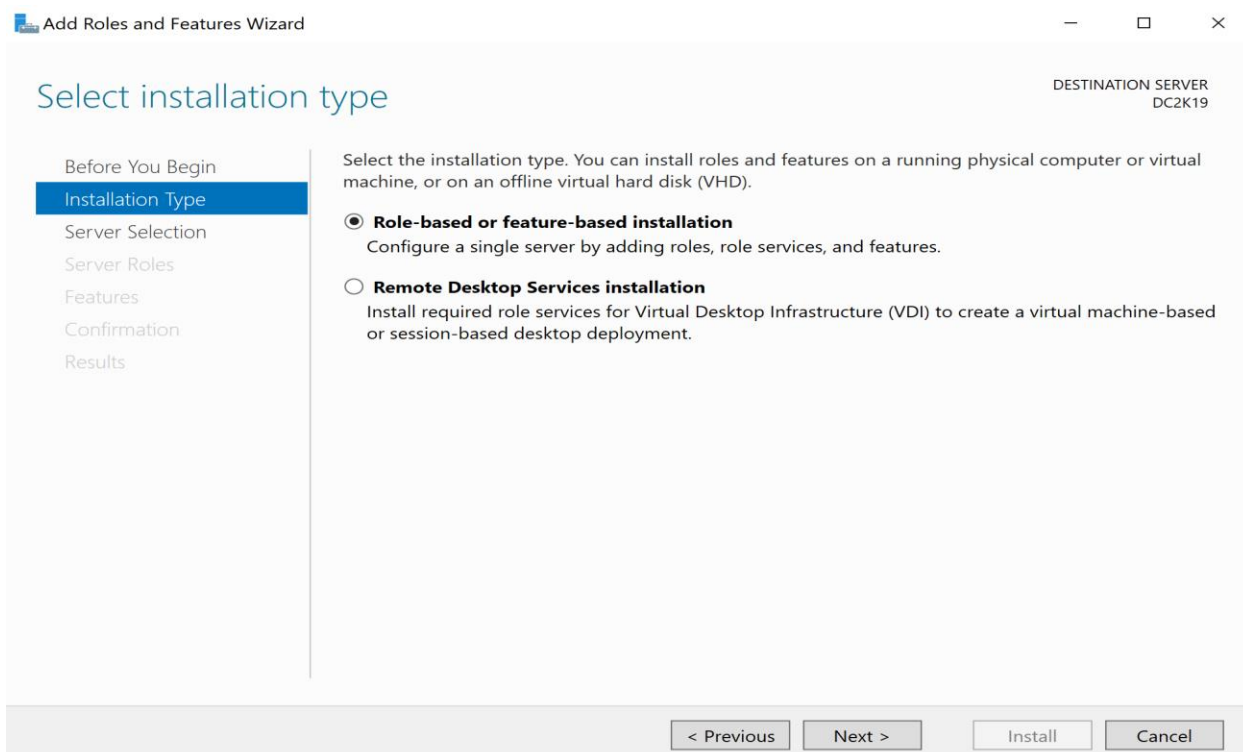
Below this is the 'ROLES AND SERVER GROUPS' section, which shows a summary: Roles: 1 | Server groups: 1 | Servers total: 1. It contains three panels:

- File and Storage Services (1):** Manageability, Events, Performance, BPA results
- Local Server (1):** Manageability, Events, Services, Performance, BPA results
- All Servers (1):** Manageability, Events, Services, Performance, BPA results

Click Next



Click first option and Next



Click Next with first option

Select destination server

DESTINATION SERVER
DC2K19

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 |
|--------|----------------|--|
| DC2K19 | 172.16.110.229 | Microsoft Windows Server 2019 Datacenter |

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

Select Active Directory Domain Services and add click features

Select server roles

DESTINATION SERVER
DC2K19

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

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

Roles

- Active Directory Certificate Services
- Active Directory Domain Services
- Active Directory Federation Services
- Active Directory Lightweight Directory Services
- Active Directory Rights Management Services
- Device Health Attestation
- DHCP Server
- DNS Server
- Fax Server
- File and Storage Services (1 of 12 roles)
- Host Guardian Service
- Hyper-V
- Network Controller
- Network Policy and Access Services
- Print and Document Services
- Remote Access
- Remote Desktop Services
- Volume Activation Services
- Web Server (IIS)
- Windows Deployment Services

Add features that are required for Active Directory Domain Services?

You cannot install Active Directory Domain Services unless the following role services or features are also installed.

- [Tools] 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
 - [Tools] Active Directory Administrative Center
 - [Tools] AD DS Snap-Ins and Command-Line Tools

 Include management tools (if applicable)

Add Features

Cancel

Keep default setting and click Next

Add Roles and Features Wizard

DESTINATION SERVER
DC2K19

Select features

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 | Description |
|--|---|
| <input type="checkbox"/> .NET Framework 3.5 Features | .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. |
| <input checked="" type="checkbox"/> .NET Framework 4.7 Features (2 of 7 installed) | |
| <input type="checkbox"/> Background Intelligent Transfer Service (BITS) | |
| <input type="checkbox"/> BitLocker Drive Encryption | |
| <input type="checkbox"/> BitLocker Network Unlock | |
| <input type="checkbox"/> BranchCache | |
| <input type="checkbox"/> Client for NFS | |
| <input type="checkbox"/> Containers | |
| <input type="checkbox"/> Data Center Bridging | |
| <input type="checkbox"/> Direct Play | |
| <input type="checkbox"/> Enhanced Storage | |
| <input type="checkbox"/> Failover Clustering | |
| <input checked="" type="checkbox"/> Group Policy Management | |
| <input type="checkbox"/> Host Guardian Hyper-V Support | |
| <input type="checkbox"/> I/O Quality of Service | |
| <input type="checkbox"/> IIS Hostable Web Core | |
| <input type="checkbox"/> Internet Printing Client | |
| <input type="checkbox"/> IP Address Management (IPAM) Server | |
| <input type="checkbox"/> iSNS Server service | |

Click Next

Add Roles and Features Wizard

DESTINATION SERVER
DC2K19


Active Directory Domain Services

Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD DS
Confirmation
Results

Active Directory Domain Services (AD DS) stores information about users, computers, and other devices on the network. AD DS helps administrators securely manage this information and facilitates resource sharing and collaboration between users.

Things to note:

- To help ensure that users can still log on to the network in the case of a server outage, install a minimum of two domain controllers for a domain.
- AD DS requires a DNS server to be installed on the network. If you do not have a DNS server installed, you will be prompted to install the DNS Server role on this machine.



Azure Active Directory, a separate online service, can provide simplified identity and access management, security reporting, single sign-on to cloud and on-premises web apps.

[Learn more about Azure Active Directory](#)

[Configure Office 365 with Azure Active Directory Connect](#)

Click restart if you want otherwise you can click on Install option without restart

Add Roles and Features Wizard

DESTINATION SERVER
DC2K19

Confirm installation selections

- 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

Click Promote this Server to a domain controller option

Add Roles and Features Wizard

DESTINATION SERVER
DC2K19

Installation progress

- Before You Begin
- Installation Type
- Server Selection
- Server Roles
- Features
- AD DS
- Confirmation
- Results**

View installation progress

i Feature installation

Configuration required. Installation succeeded on DC2K19.

- Active Directory Domain Services**
Additional steps are required to make this machine a domain controller.
[Promote this server to a domain controller](#)
- 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

i You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

[Export configuration settings](#)

You can also close this wizard and start domain controller installation from Server Manager as previous in Windows Server 2016. Select third option and give a new domain name as desired.

Deployment Configuration of Domain

Active Directory Domain Services Configuration Wizard

TARGET SERVER
DC2K19

Deployment Configuration

- 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

Keep functional level default as this is brand new installation and click Next

Active Directory Domain Services Configuration Wizard

TARGET SERVER
DC2K19

Domain Controller Options

- 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:

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

Click Next

The screenshot shows the 'DNS Options' step of the Active Directory Domain Services Configuration Wizard. The window title is 'Active Directory Domain Services Configuration Wizard' and the target server is 'DC2K19'. A yellow warning banner at the top states: 'A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found o... Show more'. The left sidebar contains a list of steps: Deployment Configuration, Domain Controller Options, DNS Options (highlighted), Additional Options, Paths, Review Options, Prerequisites Check, Installation, and Results. The main area is titled 'Specify DNS delegation options' and contains a checkbox labeled 'Create DNS delegation' which is currently unchecked. A link 'More about DNS delegation' is located at the bottom of the main area. The bottom navigation bar includes buttons for '< Previous', 'Next >', 'Install', and 'Cancel'.

Click Next NetBIOS name will be taken automatically

The screenshot shows the 'Additional Options' step of the Active Directory Domain Services Configuration Wizard. The window title is 'Active Directory Domain Services Configuration Wizard' and the target server is 'DC2K19'. The left sidebar contains a list of steps: Deployment Configuration, Domain Controller Options, DNS Options, Additional Options (highlighted), Paths, Review Options, Prerequisites Check, Installation, and Results. The main area is titled 'Verify the NetBIOS name assigned to the domain and change it if necessary'. It contains a label 'The NetBIOS domain name:' followed by a text input field containing the value 'MSTECHGURU'. A link 'More about additional options' is located at the bottom of the main area. The bottom navigation bar includes buttons for '< Previous', 'Next >', 'Install', and 'Cancel'.

Click next with default options

Active Directory Domain Services Configuration Wizard

TARGET SERVER
DC2K19

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: | <input type="text" value="C:\Windows\NTDS"/> | ... |
| Log files folder: | <input type="text" value="C:\Windows\NTDS"/> | ... |
| SYSVOL folder: | <input type="text" value="C:\Windows\SYSVOL"/> | ... |

[More about Active Directory paths](#)

< Previous Next > Install Cancel

Read the configuration summary and click Next

Active Directory Domain Services Configuration Wizard

TARGET SERVER
DC2K19

Review Options

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

Review your selections:

Configure this server as the first Active Directory domain controller in a new forest.

The new domain name is "mstechguru.ae". This is also the name of the new forest.

The NetBIOS name of the domain: MSTECHGURU

Forest Functional Level: Windows Server

Domain Functional Level: Windows Server

Additional Options:

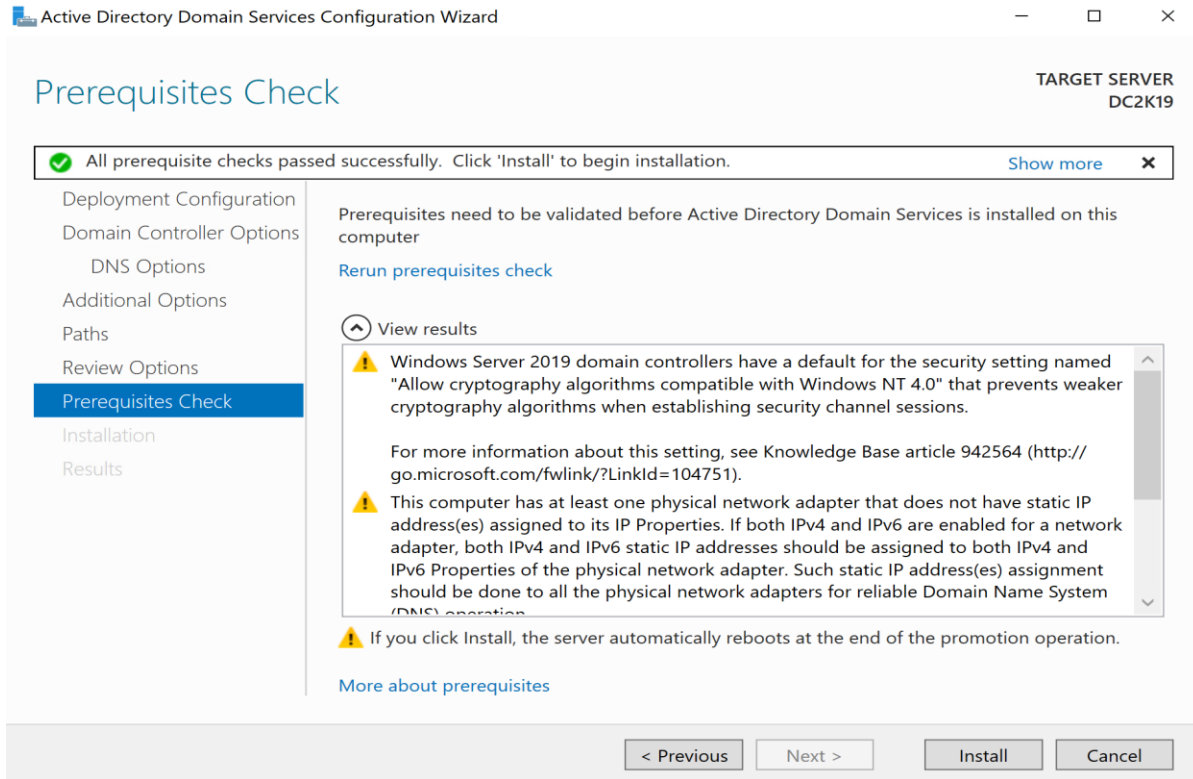
- Global catalog: Yes
- DNS Server: Yes
- Create DNS Delegation: No

These settings can be exported to a Windows PowerShell script to automate additional installations [View script](#)

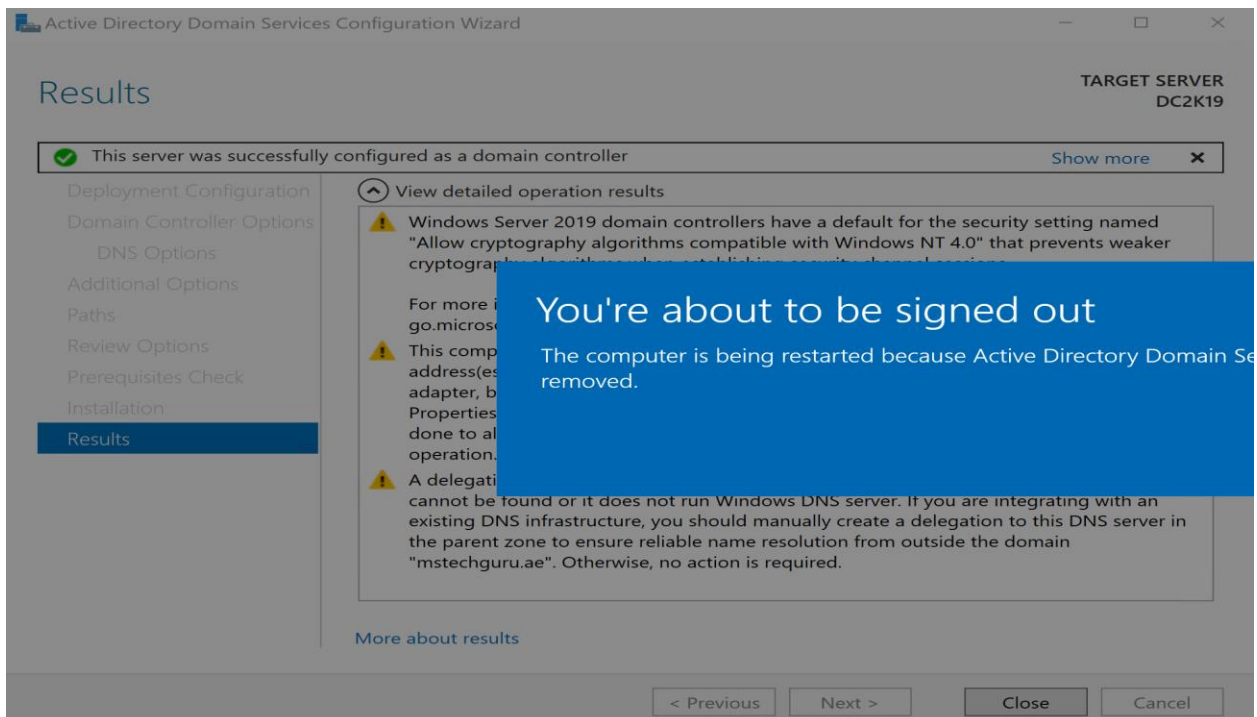
[More about installation options](#)

< Previous Next > Install Cancel

As all prerequisite are passed, Click install

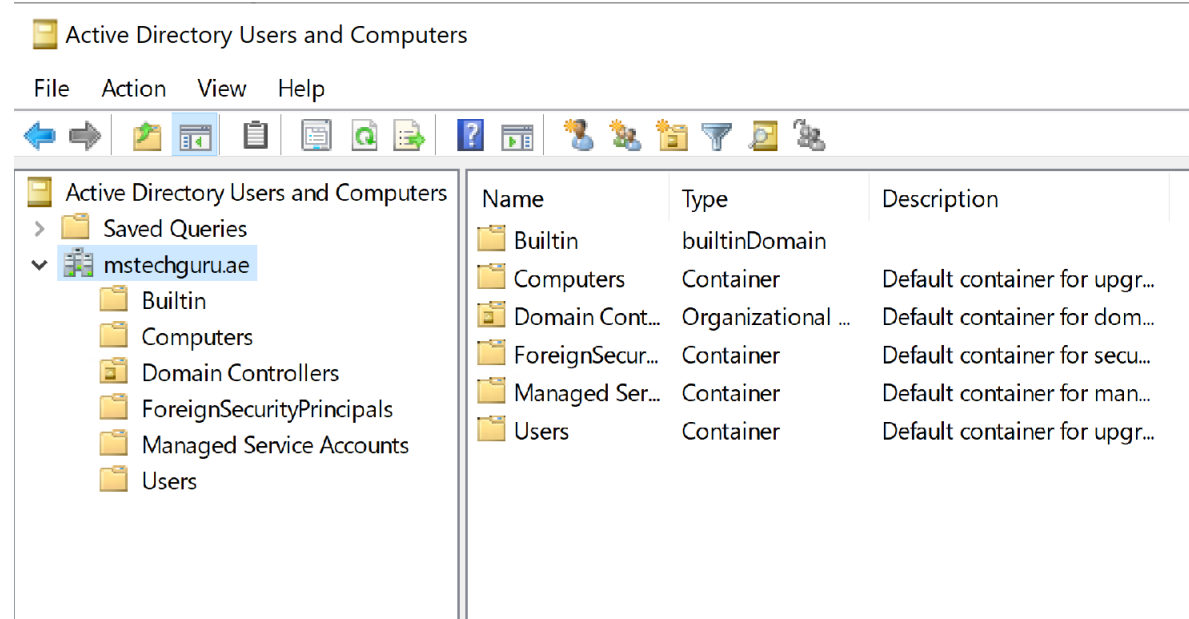
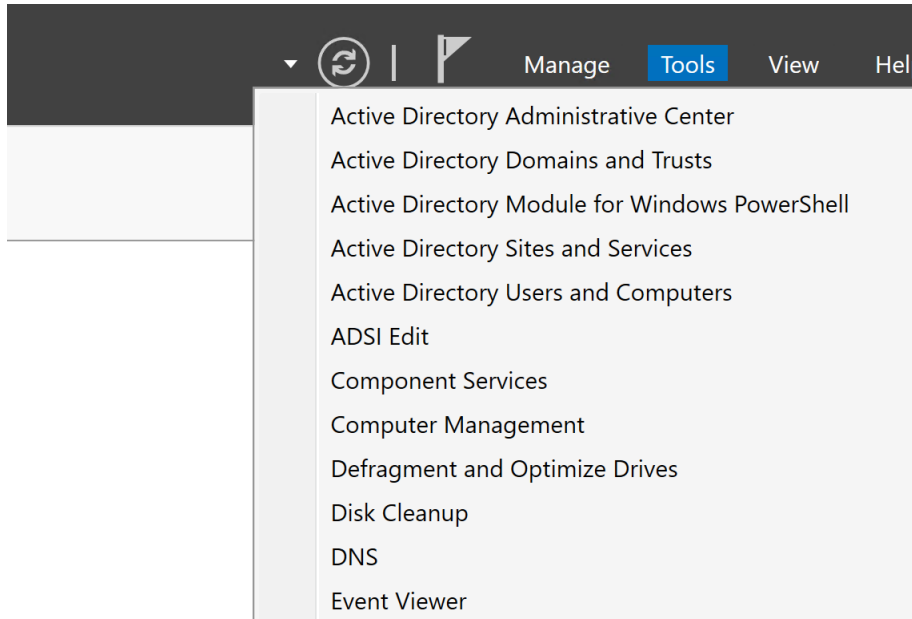


Domain controller installation has completed and it will restart your VM.



Exploring Active Directory

As you can see the Active Directory related components are installed and you can explore them one by one. Open Active Directory Users and Computer

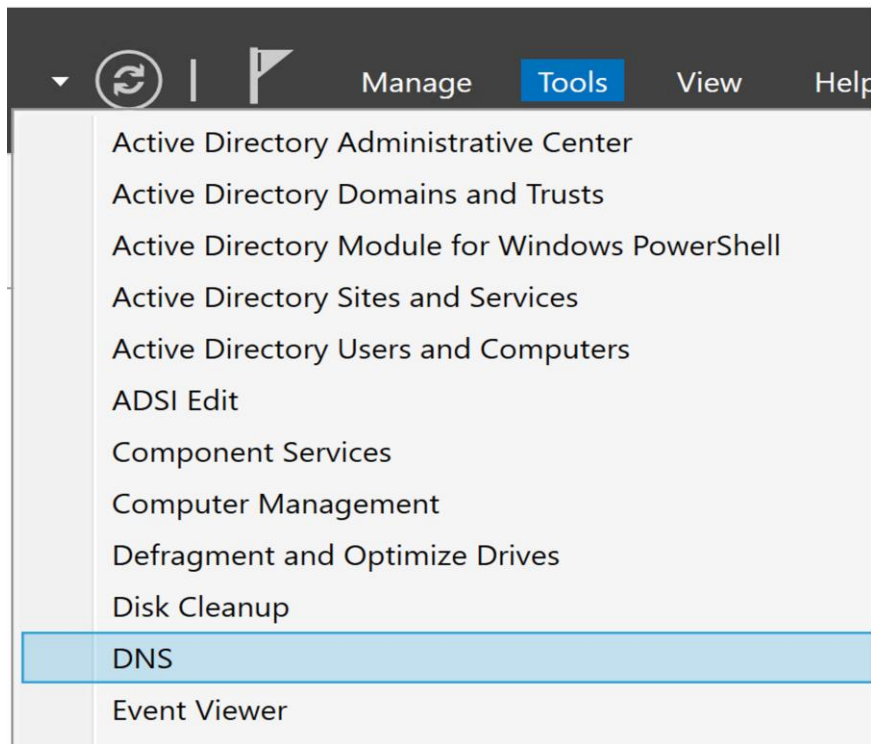


You can continue further configuration of AD as per your lab requirement such as creation of users and OU etc.

DNS Configurations

Let's configure DNS, by default forward lookup will be created during AD installation but we have to create the reverse lookup zone as per our IP address on AD server.

Open DNS from Tools in Server Manager.



Right click on Reverse lookup zone and Click on New Zone

The screenshot shows the DNS console interface. On the left, a tree view displays the hierarchy: DNS > DC2K19 > Forward Lookup Zones > _msdcs.mstechguru.ae > mstechguru.ae > Reverse Lookup Zones. The 'Reverse Lookup Zones' folder is selected, and a context menu is open with 'New Zone...' highlighted. On the right, the 'Add a New Zone' wizard is displayed. It features an information icon and the title 'Add a New Zone'. The text explains that DNS allows a namespace to be divided into zones and that each zone stores information about contiguous DNS domains. It also instructs the user to click 'New Zone' on the Action menu to add a new zone.

It will give you a wizard.

The screenshot shows the 'New Zone Wizard' window. The title bar reads 'New Zone Wizard' with a close button on the right. On the left side, there is a 3D illustration of a server tower. The main content area has the heading 'Welcome to the New Zone Wizard'. Below the heading, the text states: 'This wizard helps you create a new zone for your DNS server. A zone translates DNS names to related data, such as IP addresses or network services. To continue, click Next.' At the bottom of the window, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a blue border.

Click Next

New Zone Wizard



Zone Type

The DNS server supports various types of zones and storage.



Select the type of zone you want to create:

- Primary zone
Creates a copy of a zone that can be updated directly on this server.
- Secondary zone
Creates a copy of a zone that exists on another server. This option helps balance the processing load of primary servers and provides fault tolerance.
- Stub zone
Creates a copy of a zone containing only Name Server (NS), Start of Authority (SOA), and possibly glue Host (A) records. A server containing a stub zone is not authoritative for that zone.
- Store the zone in Active Directory (available only if DNS server is a writeable domain controller)

< Back

Next >

Cancel

Keep default options and click next

New Zone Wizard



Active Directory Zone Replication Scope

You can select how you want DNS data replicated throughout your network.



Select how you want zone data replicated:

- To all DNS servers running on domain controllers in this forest: mstechguru.ae
- To all DNS servers running on domain controllers in this domain: mstechguru.ae
- To all domain controllers in this domain (for Windows 2000 compatibility): mstechguru.ae
- To all domain controllers specified in the scope of this directory partition:

< Back

Next >

Cancel

Keep default option selected and click Next.

Reverse Lookup Zone Name

A reverse lookup zone translates IP addresses into DNS names.



Choose whether you want to create a reverse lookup zone for IPv4 addresses or IPv6 addresses.

- IPv4 Reverse Lookup Zone
- IPv6 Reverse Lookup Zone

< Back

Next >

Cancel

Select IPv4 and click Next

Reverse Lookup Zone Name

A reverse lookup zone translates IP addresses into DNS names.



To identify the reverse lookup zone, type the network ID or the name of the zone.

- Network ID:

The network ID is the portion of the IP addresses that belongs to this zone. Enter the network ID in its normal (not reversed) order.

If you use a zero in the network ID, it will appear in the zone name. For example, network ID 10 would create zone 10.in-addr.arpa, and network ID 10.0 would create zone 0.10.in-addr.arpa.

- Reverse lookup zone name:

< Back

Next >

Cancel

Give your network ID and Click Next


Dynamic Update

You can specify that this DNS zone accepts secure, nonsecure, or no dynamic updates.



Dynamic updates enable DNS client computers to register and dynamically update their resource records with a DNS server whenever changes occur.

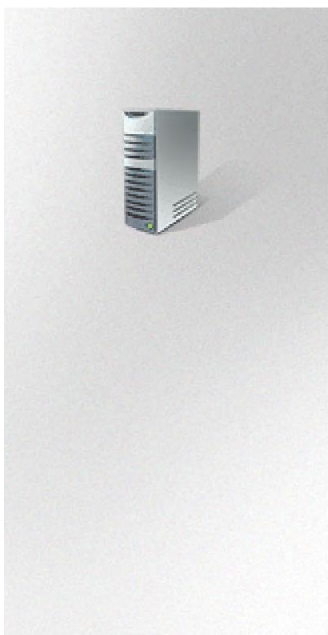
Select the type of dynamic updates you want to allow:

- Allow only secure dynamic updates (recommended for Active Directory)**
This option is available only for Active Directory-integrated zones.
- Allow both nonsecure and secure dynamic updates**
Dynamic updates of resource records are accepted from any client.
 This option is a significant security vulnerability because updates can be accepted from untrusted sources.
- Do not allow dynamic updates**
Dynamic updates of resource records are not accepted by this zone. You must update these records manually.

< Back **Next >** Cancel

Select first option and click next

Select Finish to complete.



Completing the New Zone Wizard

You have successfully completed the New Zone Wizard. You specified the following settings:

| | |
|--------------|-------------------------------------|
| Name: | 110.16.172.in-addr.arpa |
| Type: | Active Directory-Integrated Primary |
| Lookup type: | Reverse |

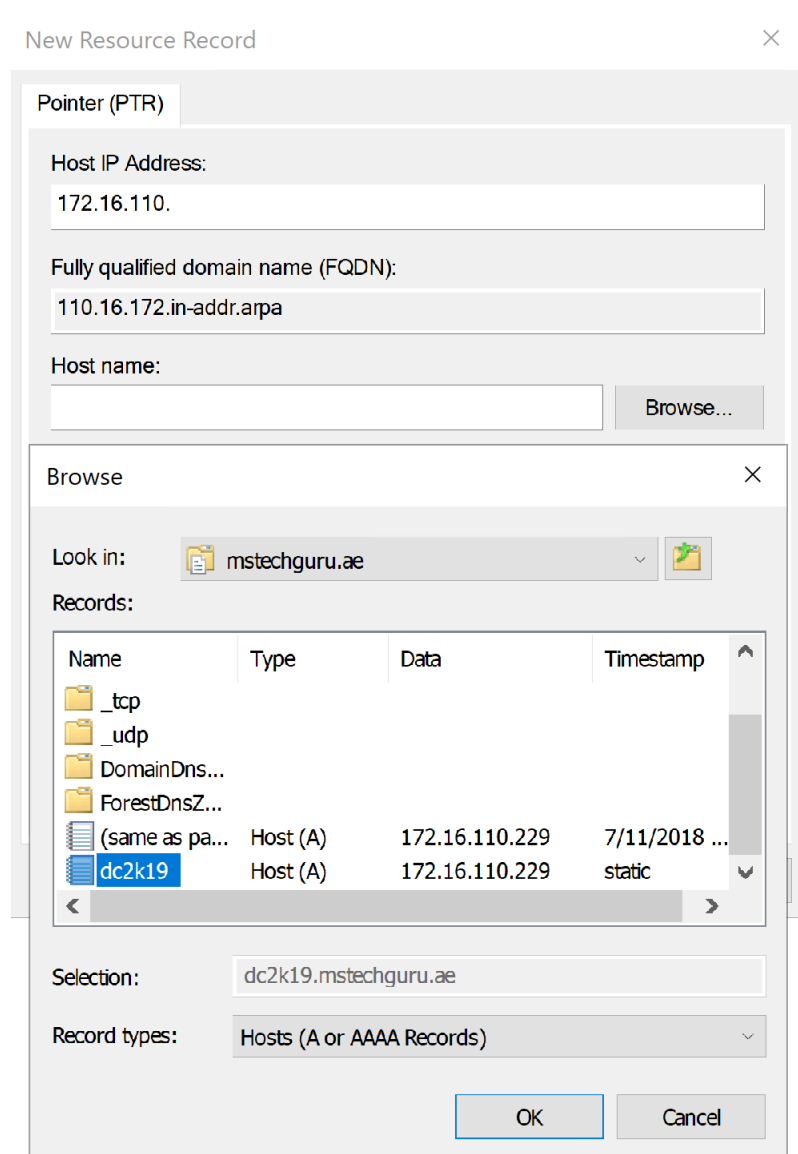
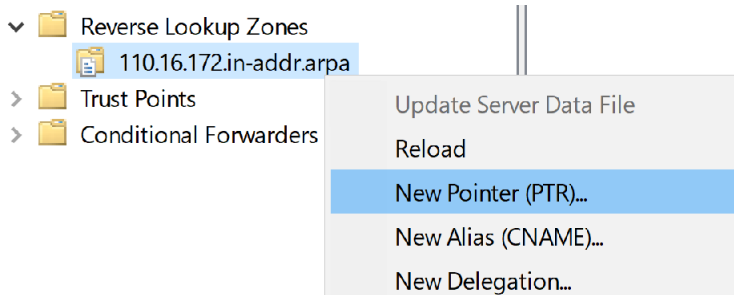
Note: You should now add records to the zone or ensure that records are updated dynamically. You can then verify name resolution using nslookup.

To close this wizard and create the new zone, click Finish.

< Back **Finish** Cancel

Reverse Lookup Configuration

Right click on your Network ID and click New Pointer (PTR)



Click Browse and select your DC record and click Ok.

New Resource Record

Pointer (PTR)

Host IP Address:
172.16.110.229

Fully qualified domain name (FQDN):
229.110.16.172.in-addr.arpa

Host name:
dc2k19.mstechguru.ae Browse...

Allow any authenticated user to update all DNS records with the same name. This setting applies only to DNS records for a new name.

OK Cancel

Click OK to finish the setup.

| Name | Type | Data | Timestamp |
|-------------------------|--------------------------|---|-----------|
| (same as parent folder) | Start of Authority (SOA) | [1] dc2k19.mstechguru.ae, hostmaster.mstechguru.ae. | static |
| (same as parent folder) | Name Server (NS) | dc2k19.mstechguru.ae. | static |
| 172.16.110.229 | Pointer (PTR) | dc2k19.mstechguru.ae | |

We have completed the DNS configuration at this point and domain controller installation is completed. You can continue using the same setup for further usage and experiments.