



Windows Server



TechData-Infinity-Devops with MultiCloud



Windows Server

Large organizations depend on Windows **Active Directory (AD)** to maintain order in the chaos that is managing users, computers, permissions, and file servers.

What is Active Directory?

Active Directory is a Microsoft product that operates on Windows Server. It is a database and set of services developed to help you with access, management, and permissions for your network resources. The organizational data is stored as an object in the Active Directory, and it can be in the form of devices, files, users, applications, groups, or shared folders. In addition, these objects can be categorized by their name or attribute.

The directory or database stores critical information related to your IT environment, including essential details about users, user permissions, and computers. In short, it helps you control various activities going on in your IT environment. Most importantly, AD also ensures user authentication, generally via user ID and passwords, and allows them to access data they're authorized to use.

How does Active Directory work?

In the AD, the domain is the primary unit in a logical structure. The objects named under the same directory database, trust relationships, and security policies with other domains are called Domains. Each domain will store data about objects belonging to that domain only.

Settings and security policies, for example, Access Control Lists (ACLs), admin rights, etc., do not pass from one domain to another. In short, the admin can set policies only for the domain they belong to. Domains allow admins to set boundaries for objects and handle security policies for shared network resources.

One of the primary Active Directory services is the AD DS (Active Directory Domain Services), a crucial part of the Windows Server OS. The AD DS runs on servers known as Domain Controllers (DCs). An enterprise usually has multiple DCs, and each of these controllers has a copy of the main directory for the domain. Any changes made to the directory on one DC- for example, deleting a user account or changing a password are all applied to the other DCs in a domain to keep them up-to-date.

Why is Active Directory So Important?

To simplify and understand the concept of AD better, consider Active Directory as the “Contacts” application on your mobile phone. The Contacts app itself acts as an Active Directory, while individual contacts in the app would be its “objects”. The values stored in each object, such as phone number, address, email, etc., would be your Active Directory. The only difference is that objects like in the mobile app aren't just limited to people, but AD may also contain group objects such as printers, computers, devices, etc.

Active Directory is vital for organizations as it helps you efficiently manage company users, computers, devices, and applications. For example, IT managers can leverage Active Directory to systematically organize company data in a hierarchy structure, which states which users or computers belong to which network, or which users have access to which network resources, and so forth.

How to Setup Active Directory Domain Controller?

A domain controller contains many computers on the network and allows the system administrators to manage them from the central place. It is a server or computer used to authenticate other computers throughout the network. It stores the login credentials of all other computers and printers in the network.

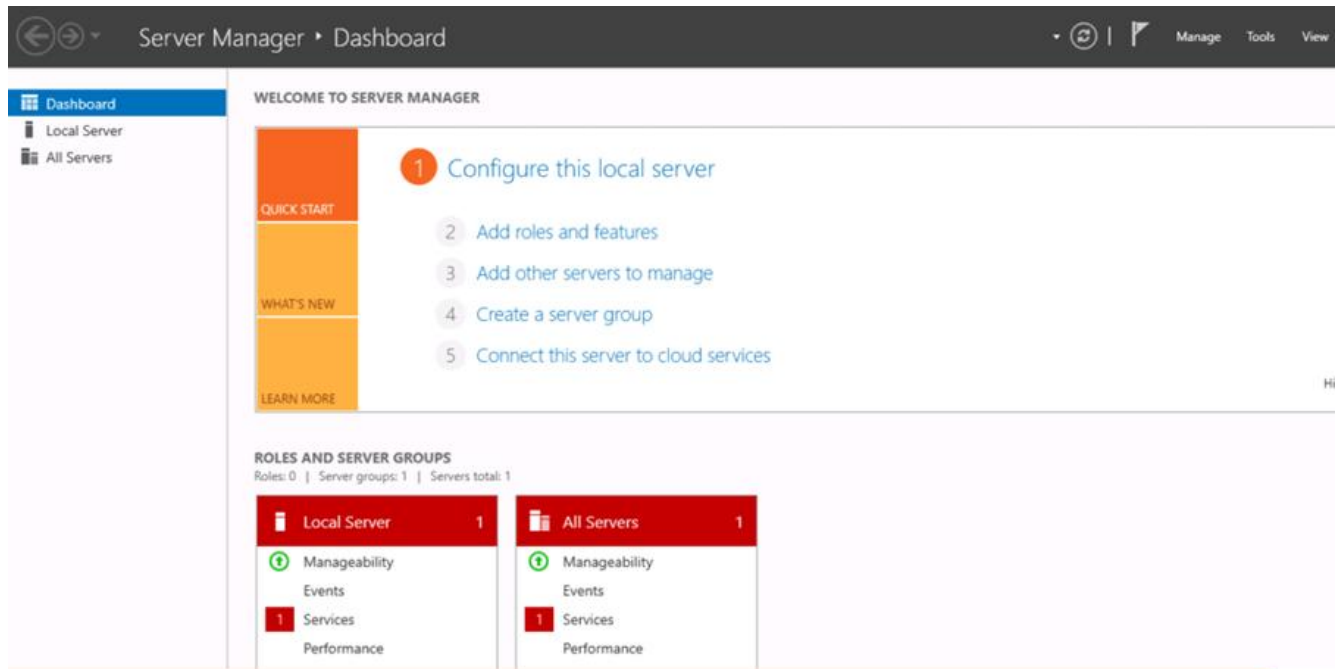
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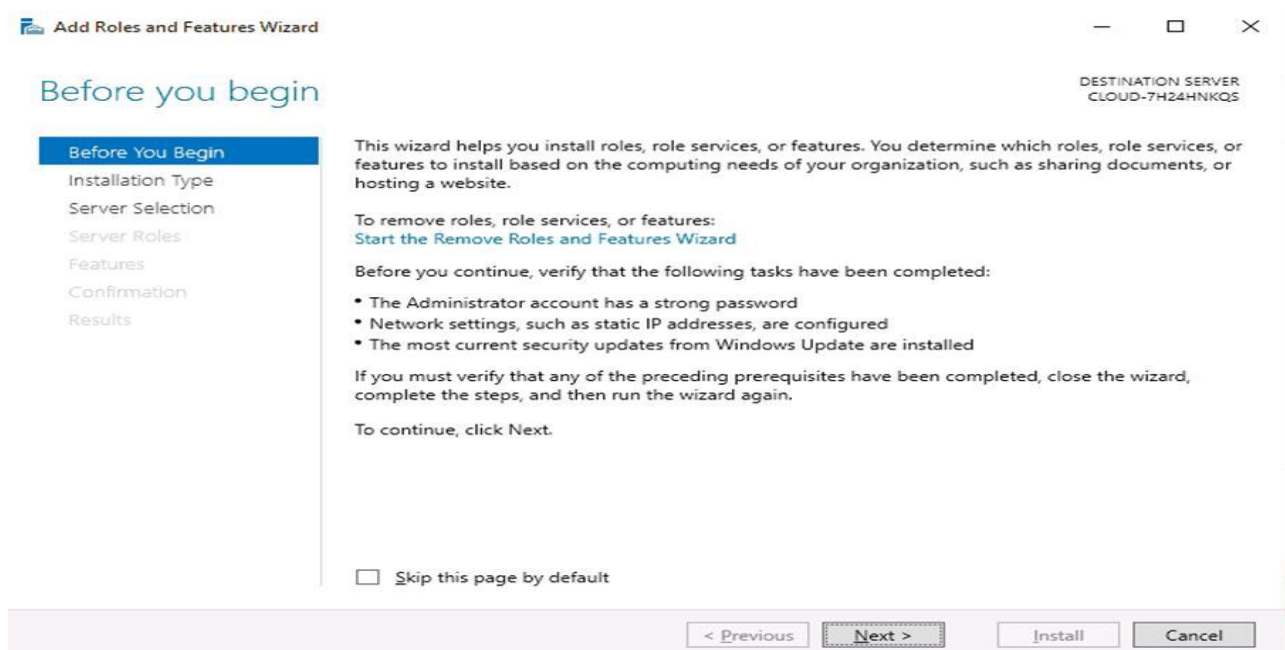
This section will show you how to install Active Directory Domain Services and set up a domain controller on Windows server 2019.

Follow the below steps to install Active Directory Domain Services:

Step 1 – Login to Windows server 2019 as an administrator and open the Server Manager as shown below:



Step 2 – Click on the Add Roles and Features. This will open the Add Roles and Features Wizard as shown below:



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Step 3 – Click on the Next button. You will be asked to select the installation type as shown below:

DESTINATION SERVER
CLOUD-7H24HNKQS

Select installation type

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

Step 4 – Select Add Roles and Features Wizard and click on the Next button. Next, you will be asked to select a destination server as shown below:

DESTINATION SERVER
CLOUD-7H24HNKQS

Select destination server

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 |
|-----------------|-------------|--|
| CLOUD-7H24HNKQS | 45.58.46.58 | 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

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Step 5 – Select “Select a server from the server pool” and click on the Next button. Next, you will be asked to select server roles as shown below:

Add Roles and Features Wizard

DESTINATION SERVER
CLOUD-7H24HNKQS

Select server roles

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

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

| Roles | Description |
|---|--|
| <input type="checkbox"/> Active Directory Certificate Services | Active Directory Domain Services (AD DS) stores information about objects on the network and makes this information available to users and network administrators. AD DS uses domain controllers to give network users access to permitted resources anywhere on the network through a single logon process. |
| <input checked="" type="checkbox"/> Active Directory Domain Services | |
| <input type="checkbox"/> Active Directory Federation Services | |
| <input type="checkbox"/> Active Directory Lightweight Directory Services | |
| <input type="checkbox"/> Active Directory Rights Management Services | |
| <input type="checkbox"/> Device Health Attestation | |
| <input type="checkbox"/> DHCP Server | |
| <input type="checkbox"/> DNS Server | |
| <input type="checkbox"/> Fax Server | |
| <input checked="" type="checkbox"/> File and Storage Services (1 of 12 installed) | |
| <input type="checkbox"/> Host Guardian Service | |
| <input type="checkbox"/> Hyper-V | |
| <input type="checkbox"/> Network Controller | |
| <input type="checkbox"/> Network Policy and Access Services | |
| <input type="checkbox"/> Print and Document Services | |
| <input type="checkbox"/> Remote Access | |
| <input type="checkbox"/> Remote Desktop Services | |
| <input type="checkbox"/> Volume Activation Services | |
| <input checked="" type="checkbox"/> Web Server (IIS) (3 of 43 installed) | |
| <input type="checkbox"/> Windows Deployment Services | |

< Previous Next > Install Cancel

Step 6 – Select Active Directory Domain Services and click on the Next button. You will be asked to select features as shown below:

Add Roles and Features Wizard

DESTINATION SERVER
CLOUD-7H24HNKQS

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 checked="" type="checkbox"/> .NET Framework 3.5 Features (1 of 3 installed) | .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 | |

< Previous Next > Install Cancel

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Step 7 – Leave all default settings and click on the Next button. Next, you should see the confirm installations selections page.

Add Roles and Features Wizard

DESTINATION SERVER
CLOUD-7H24HNKQS

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

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

< Previous Next > Install Cancel

Step 8 – Click on the Install button to start the installation. Once the installation has been finished. You should see the following page.

Add Roles and Features Wizard

DESTINATION SERVER
CLOUD-7H24HNKQS

Installation progress

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

View installation progress

Feature installation

Configuration required. Installation succeeded on CLOUD-7H24HNKQS.

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

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.

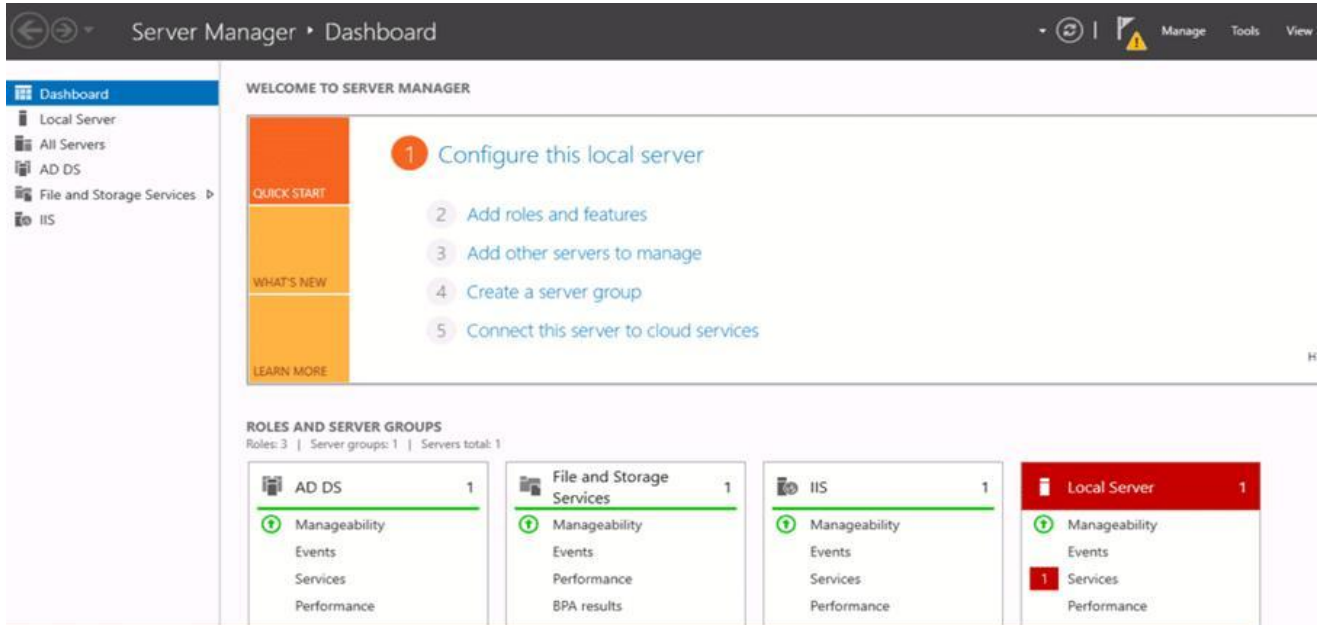
[Export configuration settings](#)

< Previous Next > Close Cancel

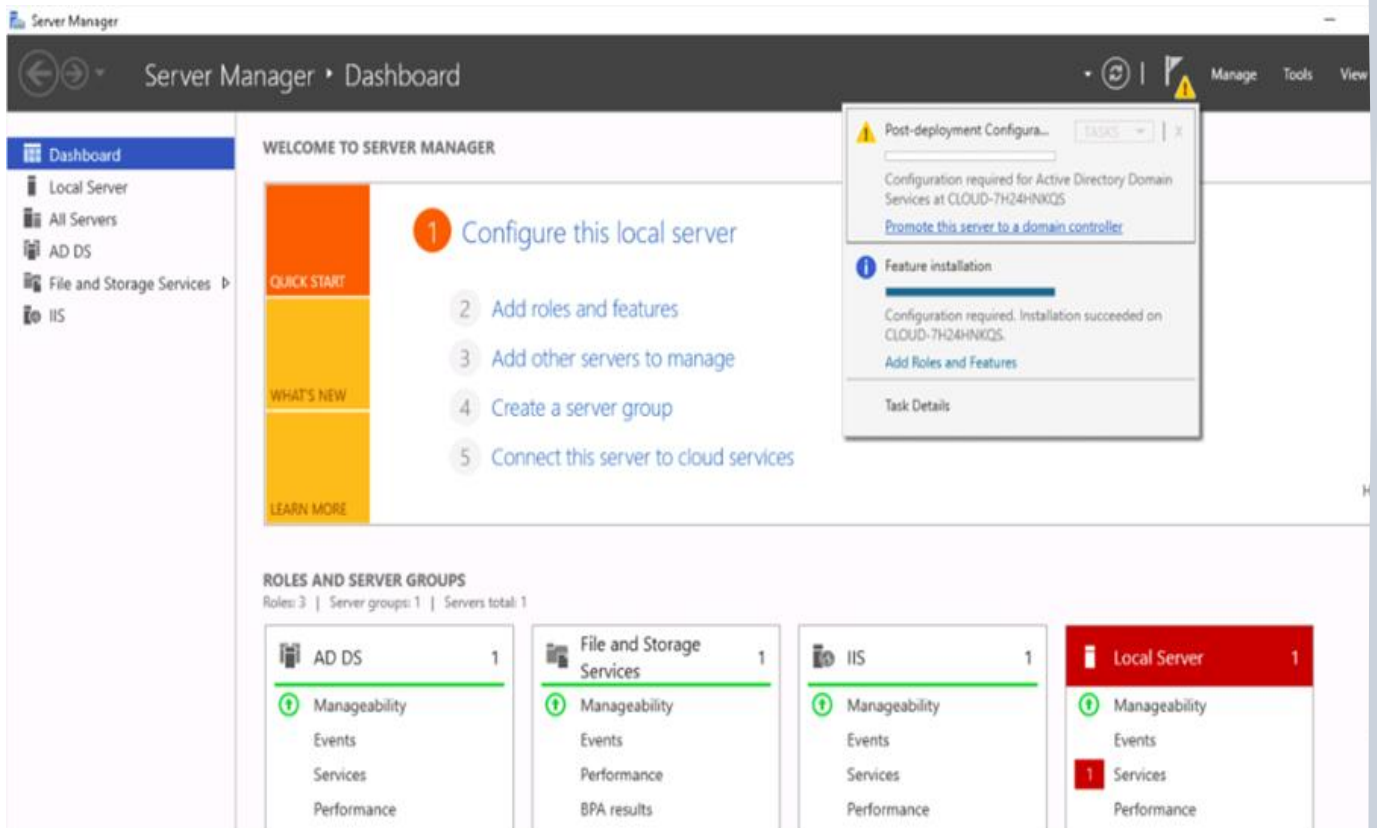
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Step 9 – Click on the Close button. You should see the following page.



Step 10– Click on the yellow notification icon. You should see the following page:



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Step 11 – Click on Promote this server to a domain controller. You should see the deployment configuration page:

Active Directory Domain Services Configuration Wizard

TARGET SERVER
CLOUD-7H24HNKQS

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

Step 12 – Select add a new forest, define your domain name and click on the Next button. You should see the domain controller options page:

Active Directory Domain Services Configuration Wizard

TARGET SERVER
CLOUD-7H24HNKQS

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

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Step 13 – Define your directory service restore mode password and click on the Next button. You should see the DNS options page:

Active Directory Domain Services Configuration Wizard

TARGET SERVER
CLOUD-7H24HNKQS

DNS Options

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

Step 14 – Leave the default configuration and click on the Next button. You will be asked to set a NetBIOS name as shown below:

Active Directory Domain Services Configuration Wizard

TARGET SERVER
CLOUD-7H24HNKQS

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

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Step 15 – Set your NetBIOS name and click on the Next button. You will be asked to define AD DS database path location:

Active Directory Domain Services Configuration Wizard

Paths

TARGET SERVER
CLOUD-7H24HNKQS

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

Step 16 – Leave the default path as it is and click on the Next button. You should see the review all options page:

Active Directory Domain Services Configuration Wizard

Review Options

TARGET SERVER
CLOUD-7H24HNKQS

Review your selections:

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

The new domain name is "mydomain.com". This is also the name of the new forest.

The NetBIOS name of the domain: MYDOMAIN

Forest Functional Level: Windows Server 2016

Domain Functional Level: Windows Server 2016

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](#)

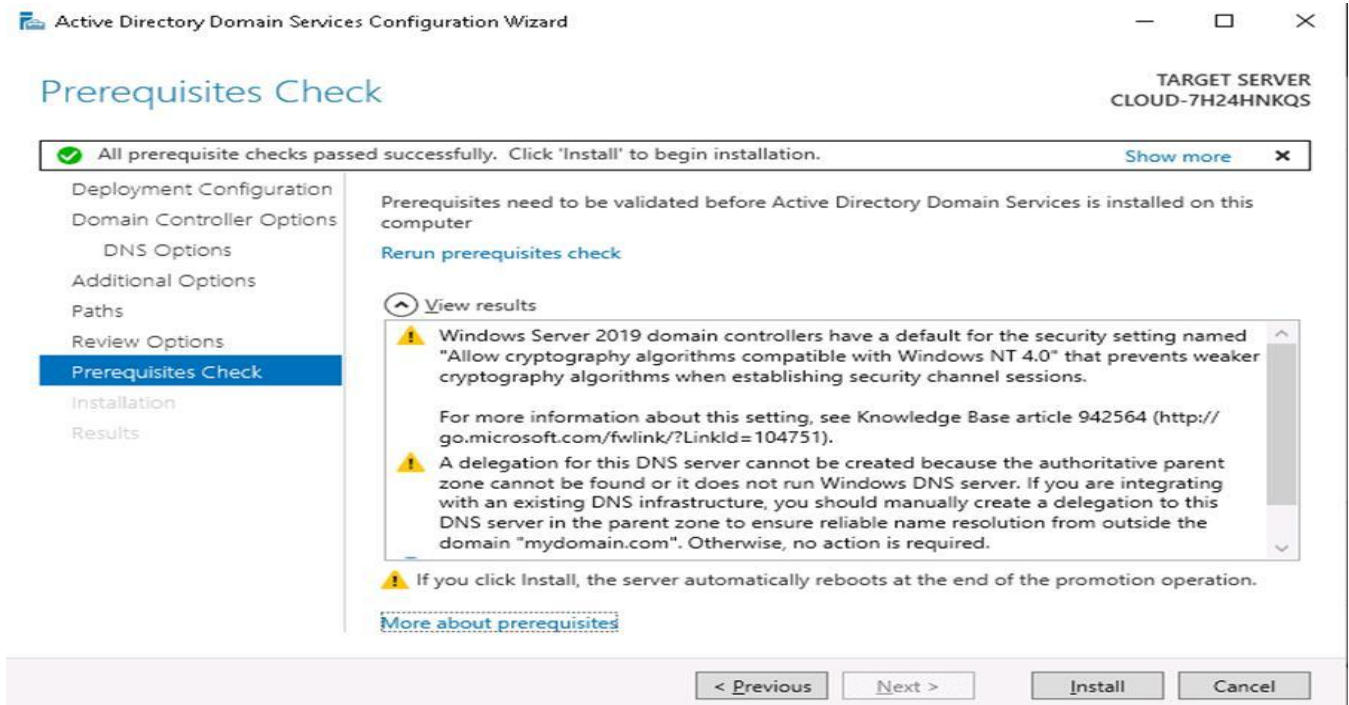
[More about installation options](#)

< Previous Next > Install Cancel

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Step 17 – Review all the configurations and click on the Next button. You should see the prerequisites check page:

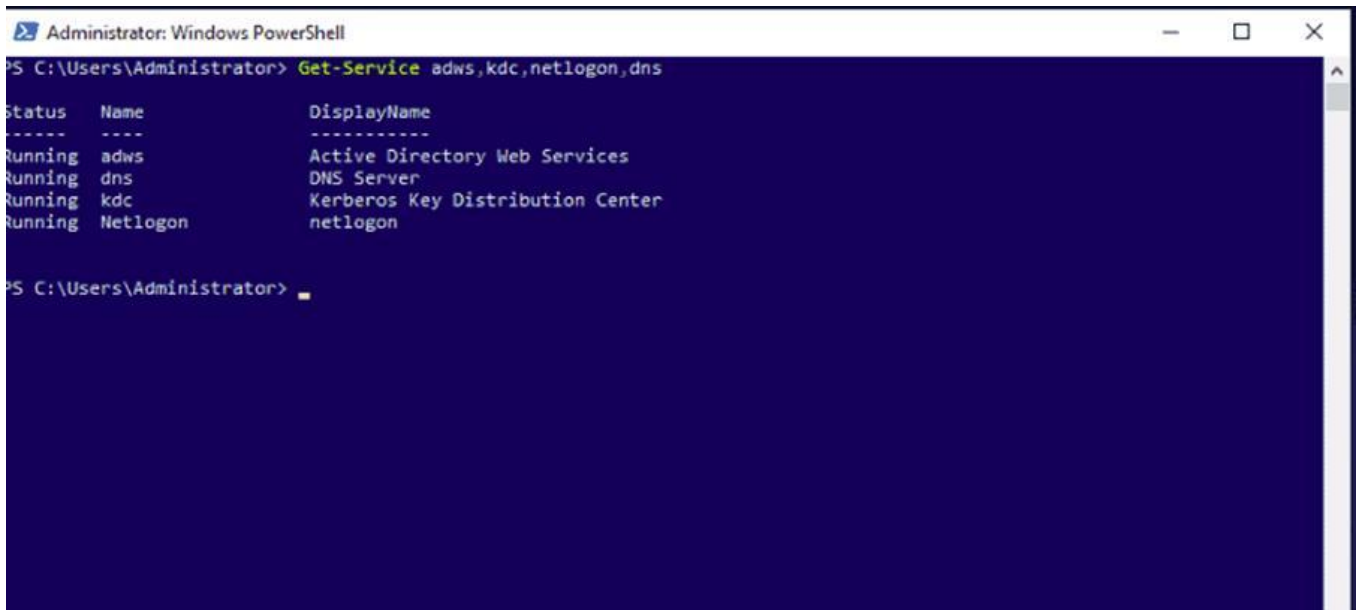


Verify Domain Controller –

To confirm the successful installation of the services, run the following command on Windows PowerShell.

Get-Service adws,kdc,netlogon,dns

You should see the status of all services on the following screen:



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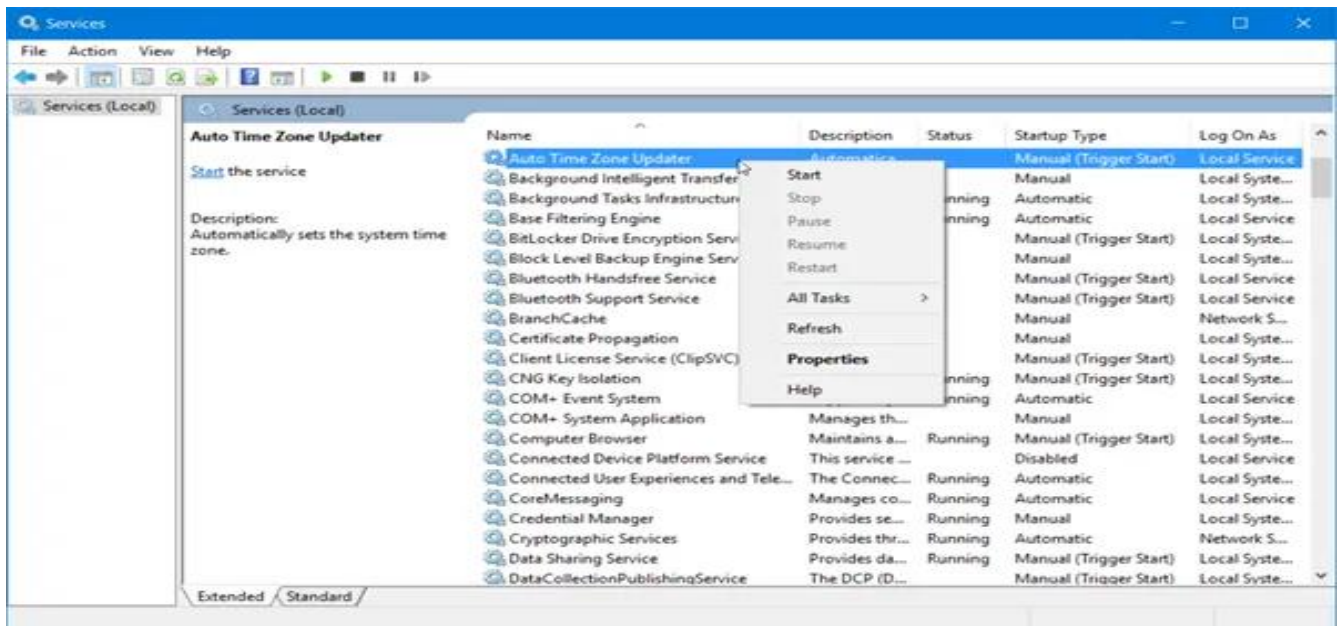


Get-ADDomain mydomain.com

Windows Services-

To open the Windows Services Manager on your Windows 11 or Windows 10 computer, do the following:

1. Right-click on the Start button to open the WinX Menu
2. Select Run
3. Type services.msc in the Run box which opens
4. Windows Services Manager will open.

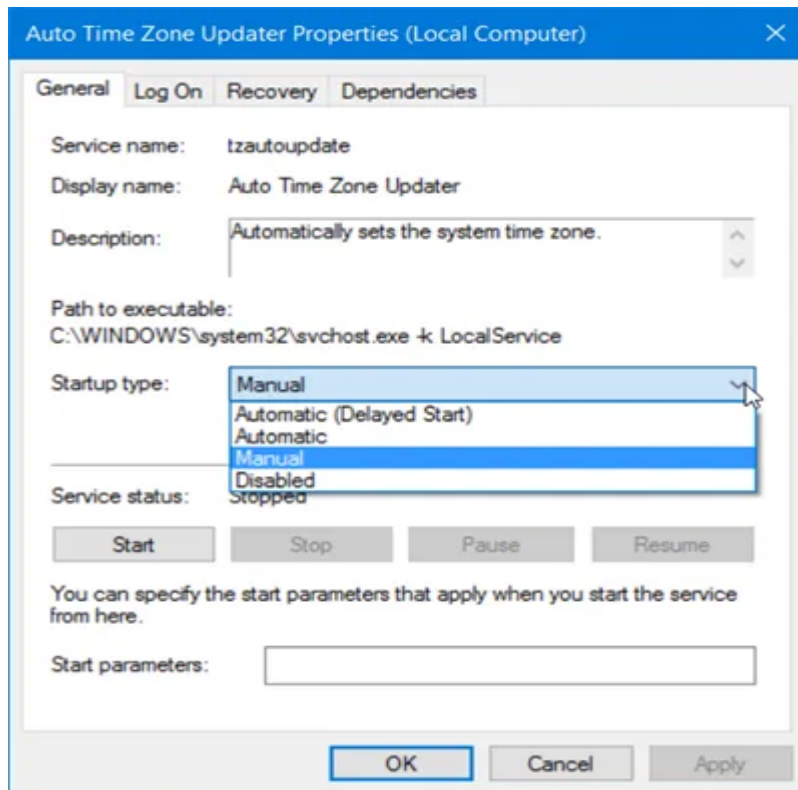


Start, Stop, Disable Windows Services-

To start, stop, pause, resume or restart any Windows Service, select the Service and right-click on it. You will be offered these options.

If you wish to manage more options, double-click on the Service to open its Properties box.

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Manage Windows Services using Command Line-

You can also use the Command Prompt to start, stop, pause, resume service. To use it, from the WinX Menu, open Command Prompt (Admin) and execute one of the following commands:

To start a service:

```
net startservice
```

To stop a service:

```
net stopservice
```

To pause a service:

```
net pauseservice
```

To resume a service:

```
net continueservice
```

To disable a service:

```
sc config "Name Of Service" start= disabled
```

=====

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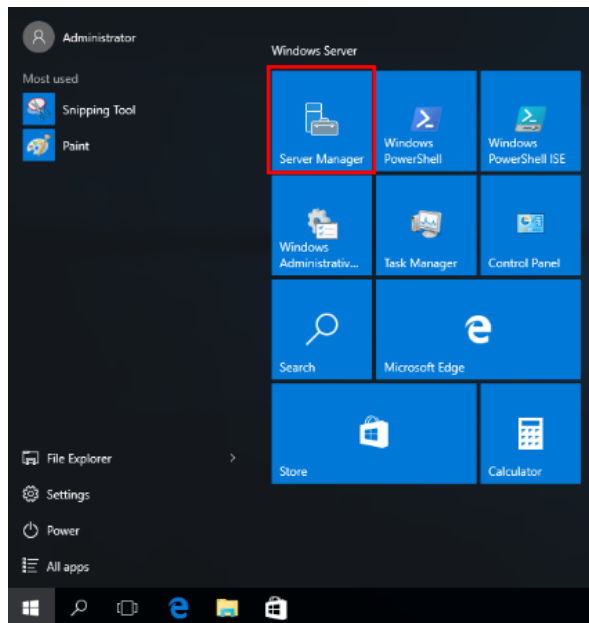


IIS-

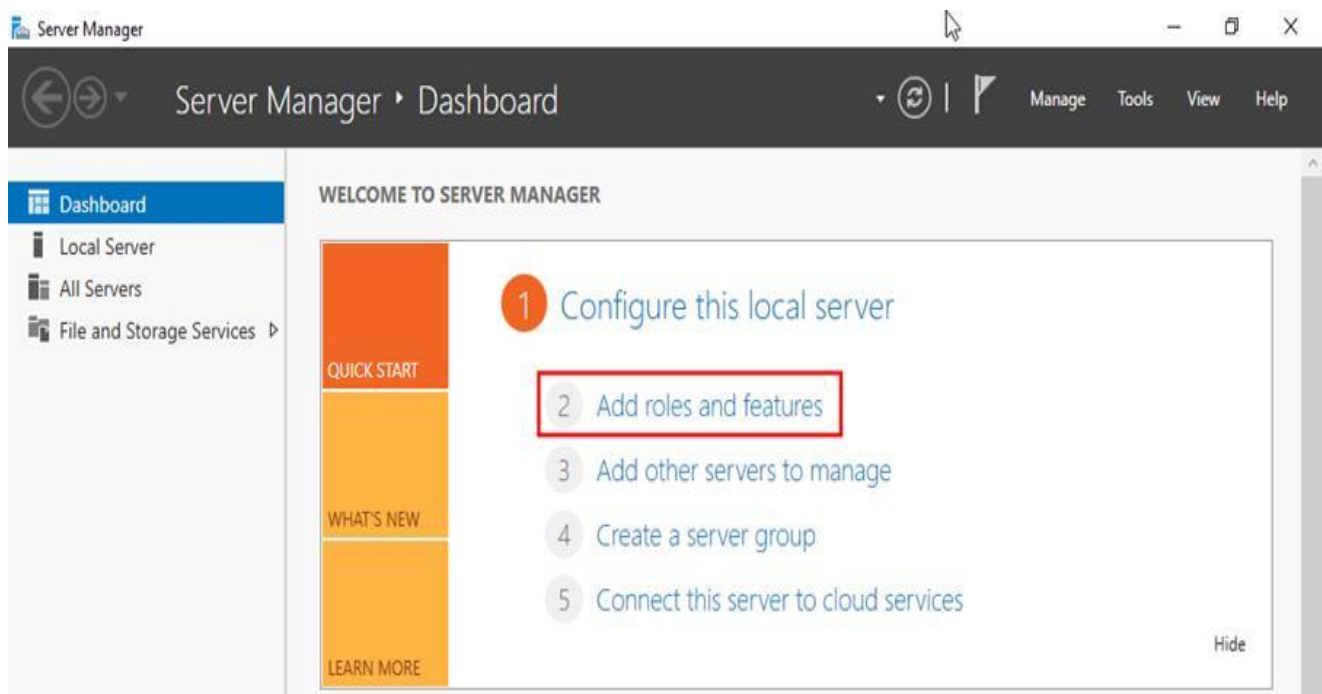
The term “IIS” stands for Internet Information Services, which is a general-purpose webserver that runs on the Windows operating system.

Install IIS-

1. Open Server Manager, this can be found in the start menu. If it's not there simply type “Server Manager” with the start menu open and it should be found in the search.



2. Click the “Add roles and features” text.



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3. On the “Before you begin” window, simply click the Next button.

The screenshot shows the 'Add Roles and Features Wizard' window. The title bar reads 'Add Roles and Features Wizard'. The main heading is 'Before you begin'. On the right, it says 'DESTINATION SERVER WIN-RC4A51T23CU'. A left-hand navigation pane lists: 'Before You Begin' (selected), 'Installation Type', 'Server Selection', 'Server Roles', 'Features', 'Confirmation', and 'Results'. The main content area contains the following text: 'This wizard helps you install roles, role services, or features. You determine which roles, role services, or features to install based on the computing needs of your organization, such as sharing documents, or hosting a website.' Below this, it says 'To remove roles, role services, or features: Start the Remove Roles and Features Wizard'. Then, 'Before you continue, verify that the following tasks have been completed:' followed by a bulleted list: '• The Administrator account has a strong password', '• Network settings, such as static IP addresses, are configured', and '• The most current security updates from Windows Update are installed'. It then states: 'If you must verify that any of the preceding prerequisites have been completed, close the wizard, complete the steps, and then run the wizard again.' Below that, 'To continue, click Next.' and a checkbox 'Skip this page by default' which is unchecked. At the bottom, there are four buttons: '< Previous', 'Next >', 'Install', and 'Cancel'.

4. On the “Select installation type” window, leave “Role-based or feature-based installation” selected and click Next.

The screenshot shows the 'Add Roles and Features Wizard' window. The title bar reads 'Add Roles and Features Wizard'. The main heading is 'Select installation type'. On the right, it says 'DESTINATION SERVER WIN-RC4A51T23CU'. A left-hand navigation pane lists: 'Before You Begin', 'Installation Type' (selected), 'Server Selection', 'Server Roles', 'Features', 'Confirmation', and 'Results'. The main content area contains the following text: '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).' Below this, there are two radio button options: '• Role-based or feature-based installation' (selected) with the description 'Configure a single server by adding roles, role services, and features.', and '○ Remote Desktop Services installation' with the description 'Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment.' At the bottom, there are four buttons: '< Previous', 'Next >', 'Install', and 'Cancel'.

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5. As we're installing to our local machine, leave "Select a server from the server pool" with the current machine selected and click Next. Alternatively you can select another server that you are managing from here, or a VHD.

Add Roles and Features Wizard

DESTINATION SERVER
WIN-RC4A51T23CU

Select destination server

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 |
|-----------------|--------------|---|
| WIN-RC4A51T23CU | 192.168.1.12 | Microsoft Windows Server 2016 Datacenter Technical Pr |

< >

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

6. From the "Select server roles" window, check the box next to "Web Server (IIS)". Doing this may open up a new window advising that additional features are required, simply click the "Add Features" button to install these as well. Click Next back on the Select server roles menu once this is complete.

Add Roles and Features Wizard

DESTINATION SERVER
WIN-RC4A51T23CU

Select server roles

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 Lightweight Directory Services
- ☐ Active Directory Rights Management Services
- ☐ Device Health Attestation
- ☐ DHCP Server
- ☐ DNS Server
- ☐ Fax Server
- ☒ File and Storage Services (1 of 12 installed)
- ☐ Host Guardian Service
- ☐ Hyper-V
- ☐ MultiPoint Services
- ☐ 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
- ☐ Windows Server Essentials Experience
- ☐ Windows Server Update Services

Description

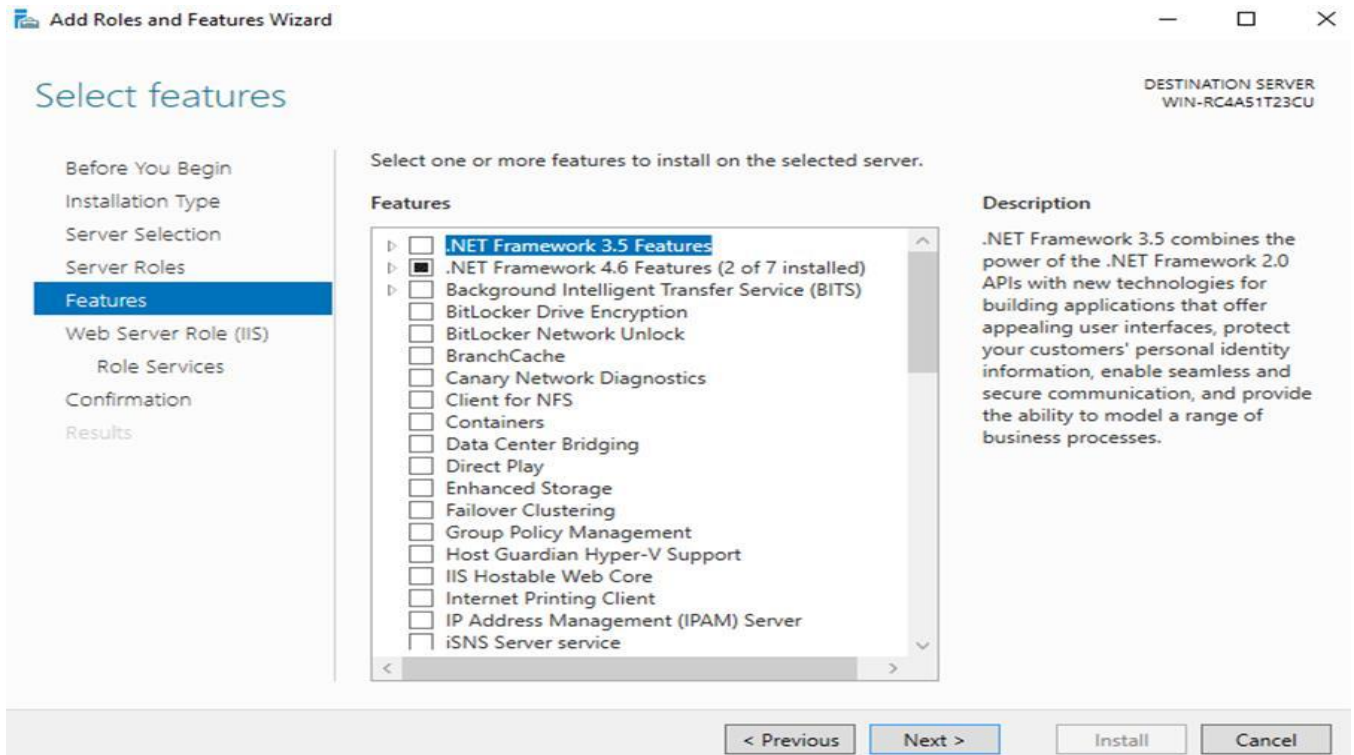
Web Server (IIS) provides a reliable, manageable, and scalable Web application infrastructure.

< Previous Next > Install Cancel

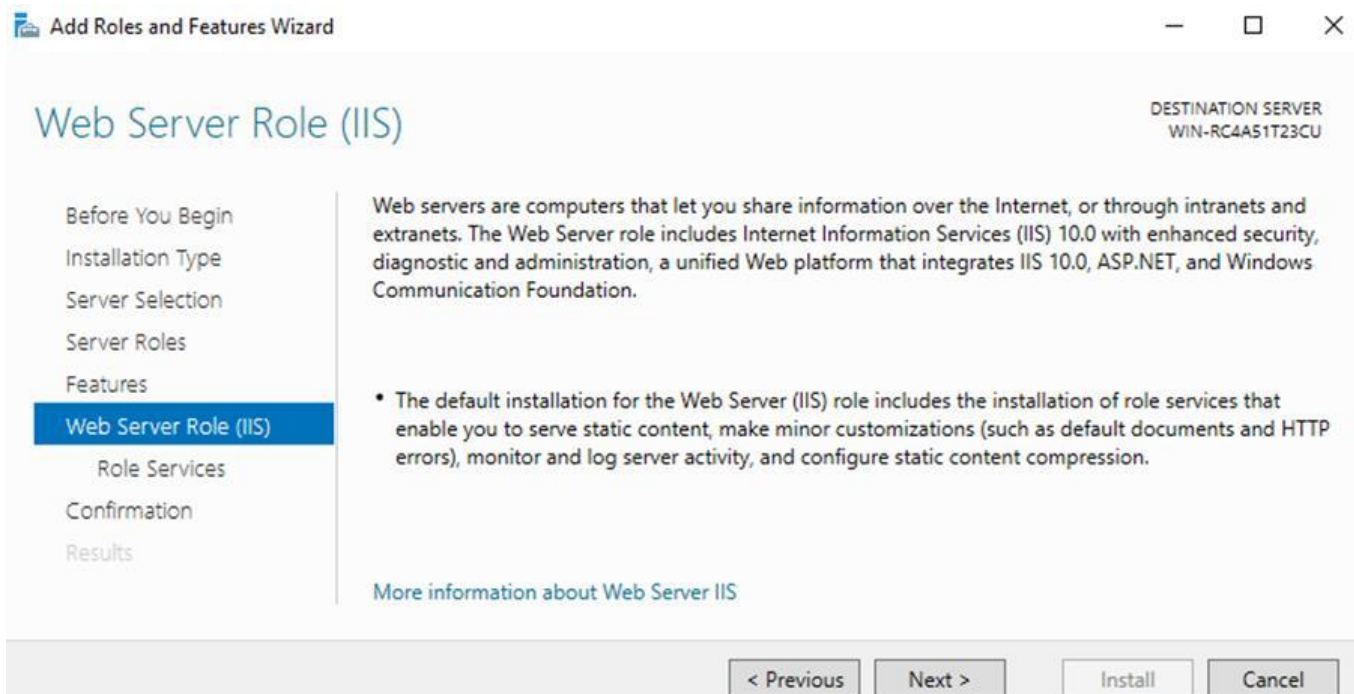
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7. We will not be installing any additional features at this stage, so simply click Next on the “Select features” window.



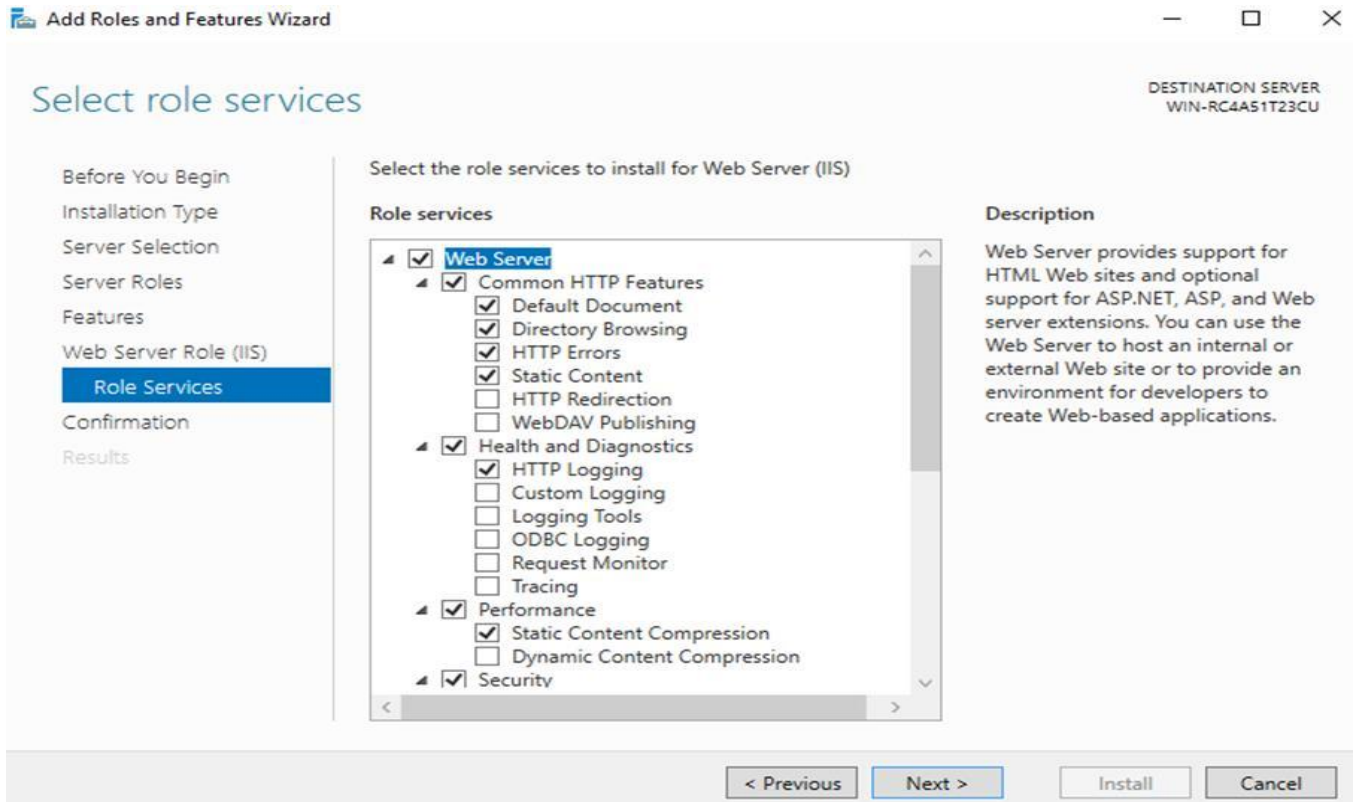
8. Click Next on the “Web Server Role (IIS)” window after reading the information provided.



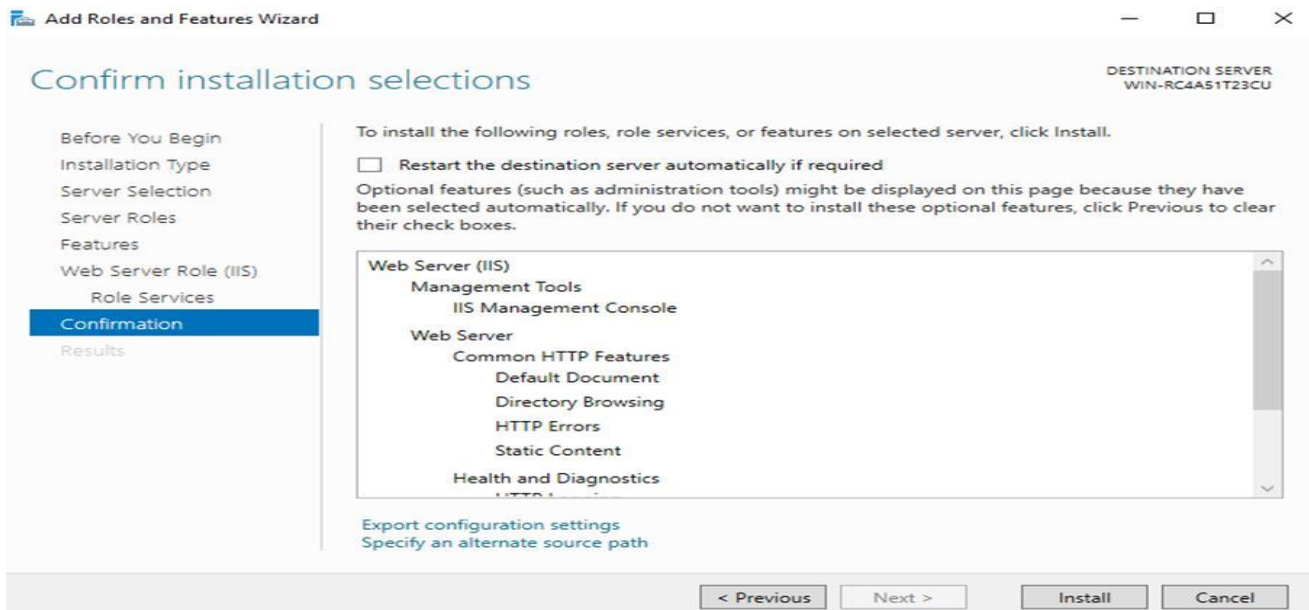
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9. At this point on the “Select role services” window you can install additional services for IIS if required. You don’t have to worry about this now as you can always come back and add more later, so just click Next for now to install the defaults.



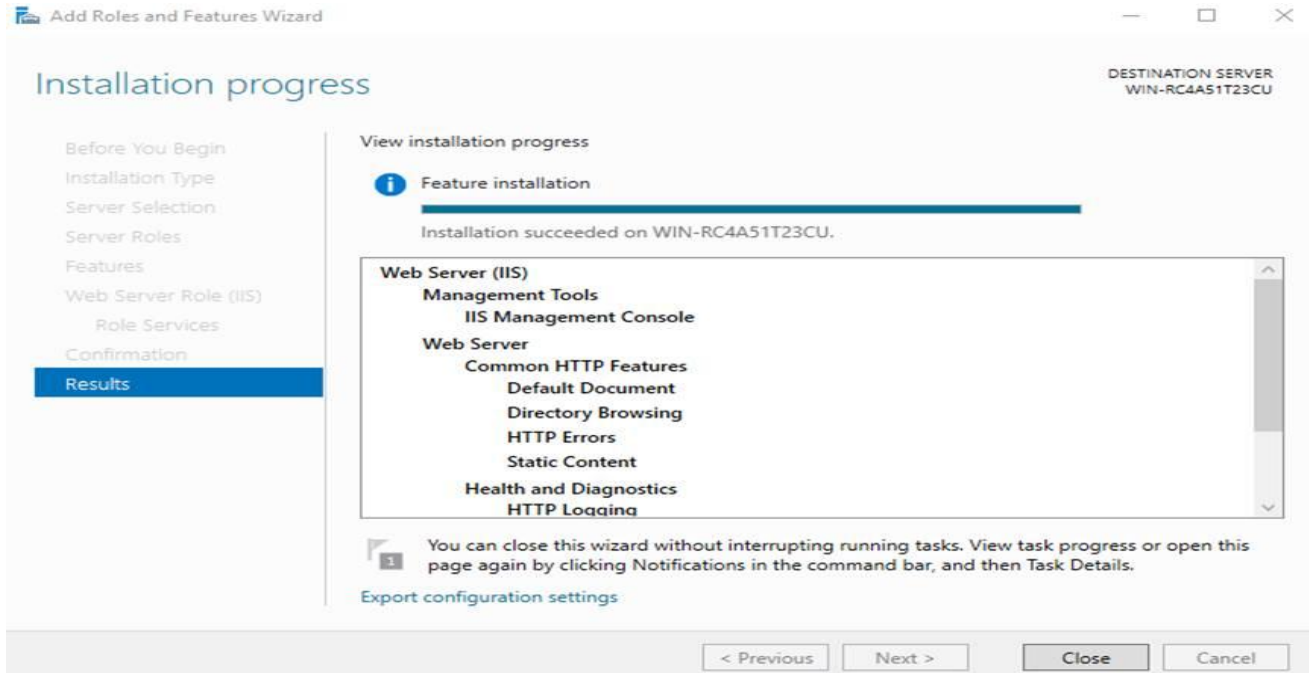
10. Finally on the “Confirm installation selections” window , review the items that are to be installed and click Install when you’re ready to proceed with installing the IIS web server.



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11. Once the installation has succeeded, click the close button. At this point IIS should be running on port 80 by default with the firewall rule “World Wide Web Services (HTTP Traffic-In)” enabled in Windows firewall automatically.



12. We can perform a simple test by opening up a web browser and browsing to the server that we have installed IIS on. You should see the default IIS page.

