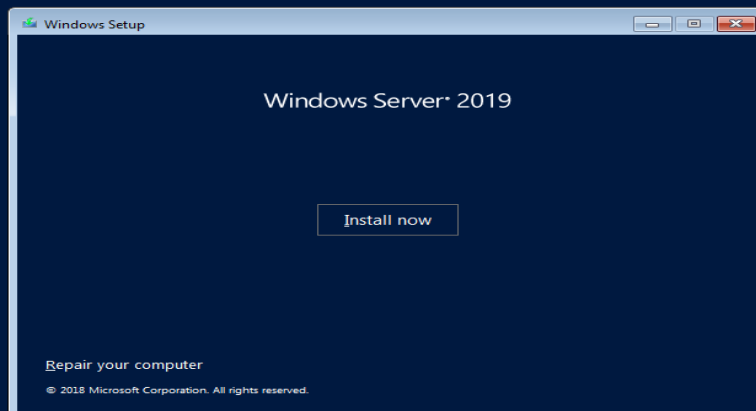
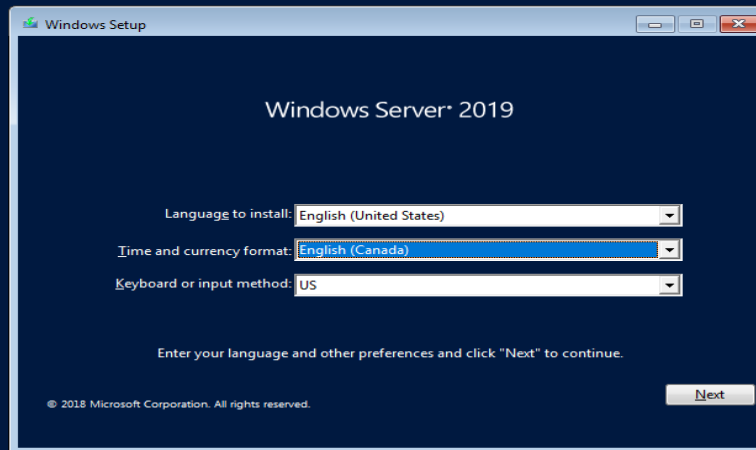
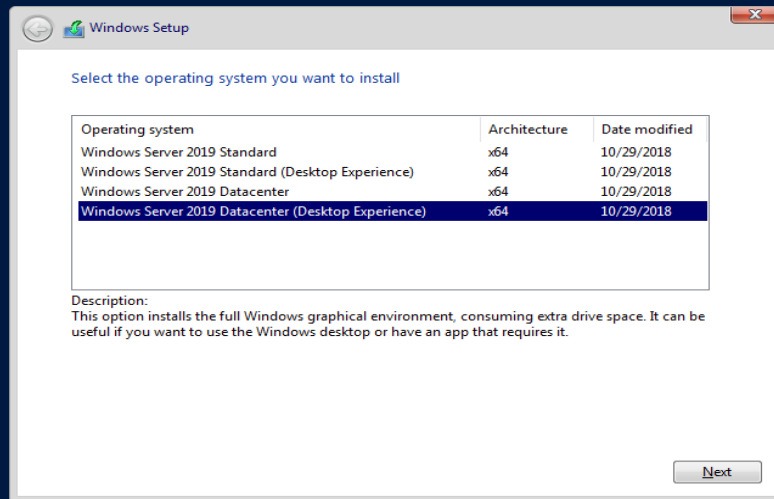


## HOW TO INSTALL DOMAIN CONTROLLER ROLE ON WINDOWS SERVER 2019

In this post, I will show you how to install and configure Domain Controller role on Windows Server 2019. So far, I have installed Windows Server 2019 operating system and installed all the updates and restarted the system.

Create a bootable USB and boot the system to start Server 2019 installation as described below:



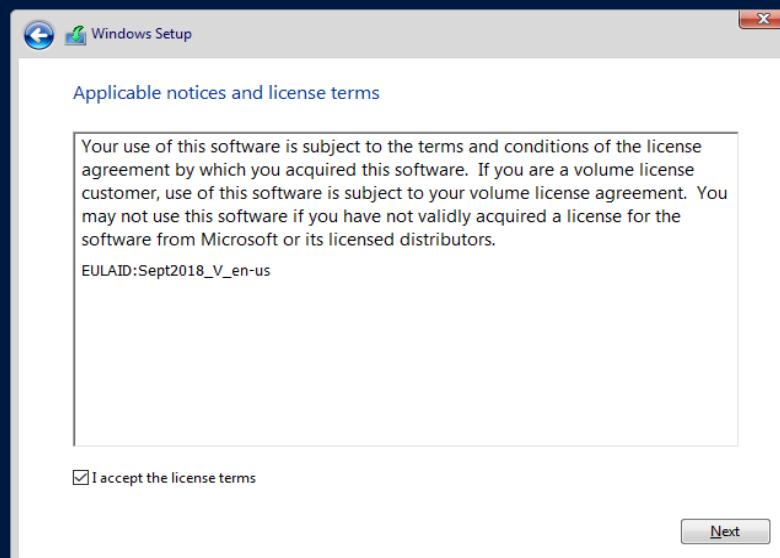


1

Collecting information

2

Installing Windows

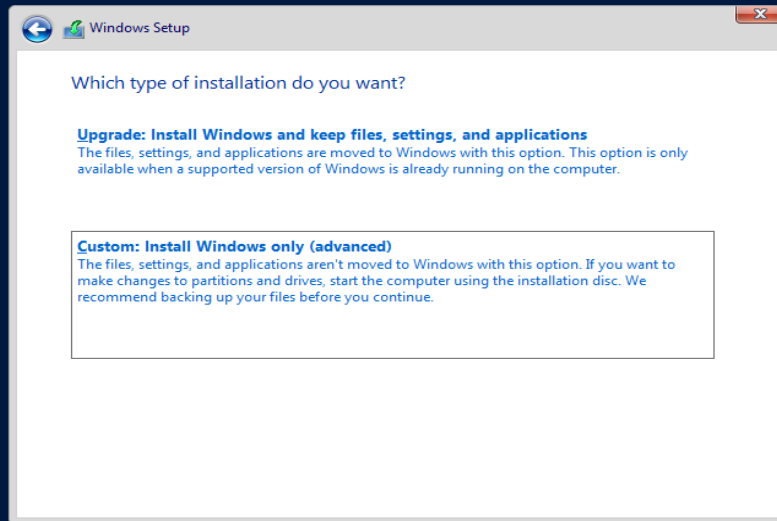


1

Collecting information

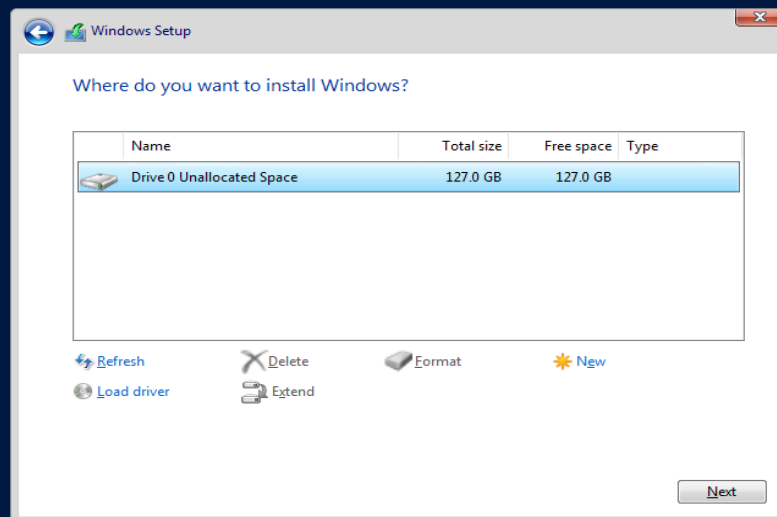
2

Installing Windows



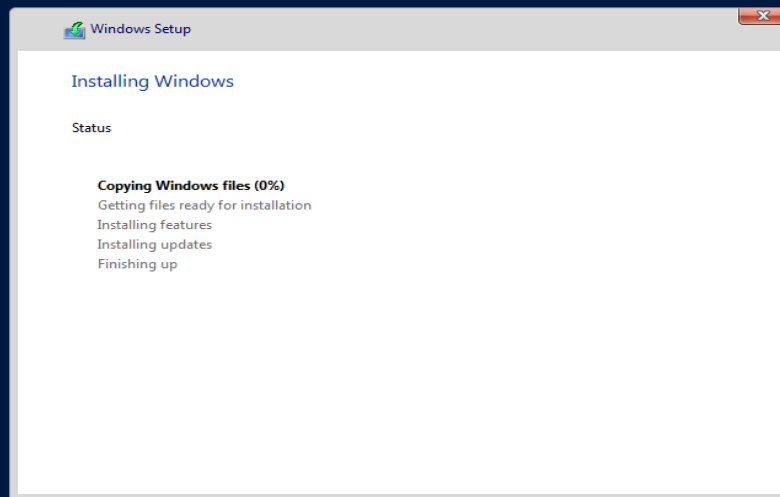
1 Collecting information

2 Installing Windows

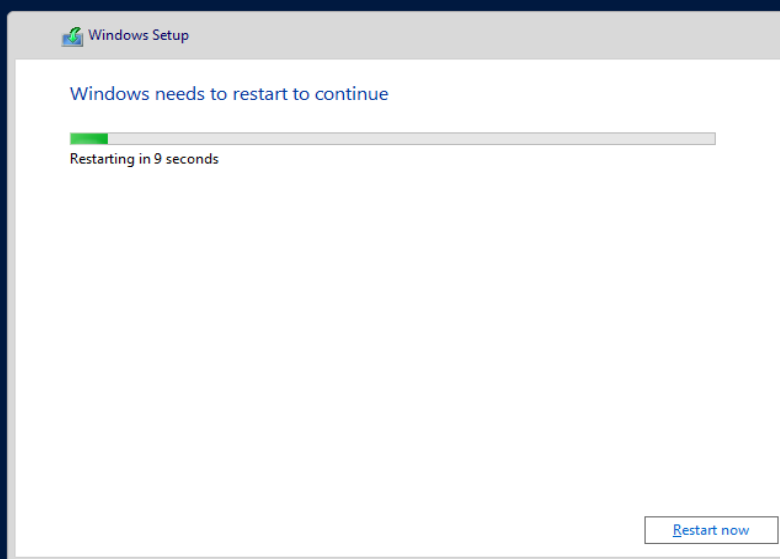


1 Collecting information

2 Installing Windows



1 Collecting information 2 Installing Windows



1 Collecting information 2 Installing Windows

Hyper-V™



Starting services


Hyper-V™



Getting ready

## Customize settings

Type a password for the built-in administrator account that you can use to sign in to this computer.


User name	<input type="text" value="Administrator"/>
Password	<input type="password" value="••••••••"/>
Reenter password	<input type="password" value="••••••••"/> 



Finish

## Customize settings

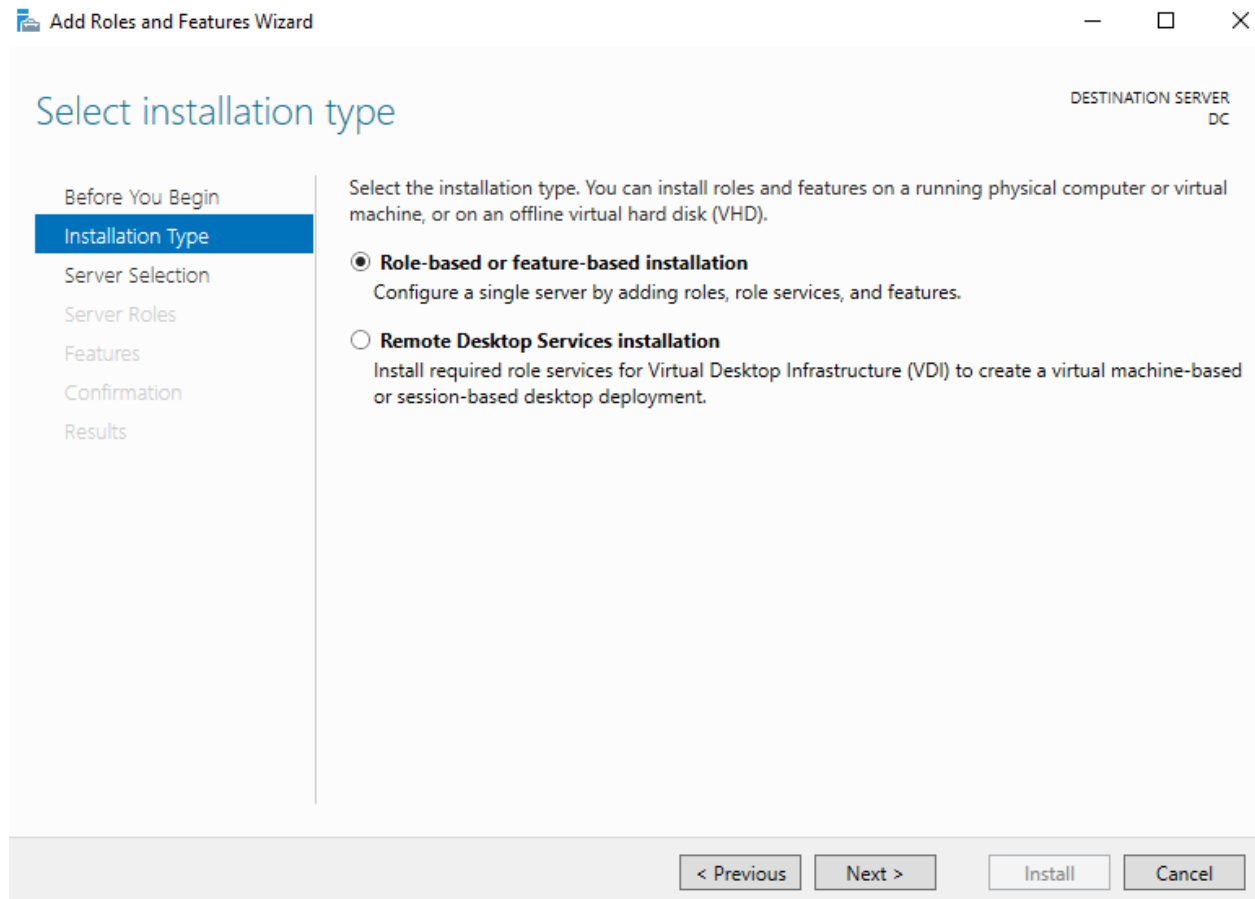
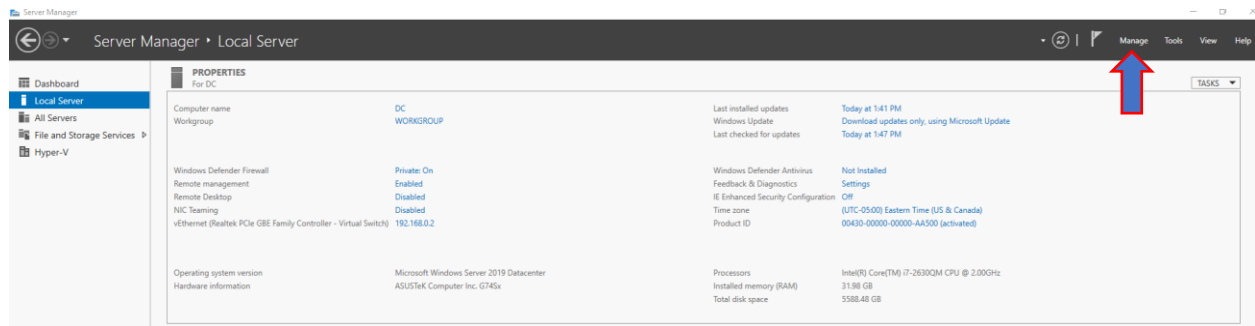
Type a password for the built-in administrator account that you can use to sign in to this computer.

User name	<input type="text" value="Administrator"/>
Password	<input type="password" value="••••••••"/>
Reenter password	<input type="password" value="••~••••••"/> 



Finish

## ADDS Install: Open Server Manager



## Select destination server

DESTINATION SERVER  
DC

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: <input type="text"/>		
Name	IP Address	Operating System
DC	192.168.0.2	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.

&lt; Previous

Next &gt;

Install

Cancel

## Select server roles

DESTINATION SERVER  
DC

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD DS

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 installed)
- ☐ Host Guardian Service
- ☒ Hyper-V (Installed)
- ☐ 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

## Description

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.

&lt; Previous

Next &gt;

Install

Cancel



## Select features

DESTINATION SERVER  
DC

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 (1 of 3 installed)**
- ☒ **.NET Framework 4.7 Features (2 of 7 installed)**
- ☐ Background Intelligent Transfer Service (BITS)
- ☐ BitLocker Drive Encryption
- ☐ BitLocker Network Unlock
- ☐ BranchCache
- ☒ Client for NFS (Installed)
- ☐ Containers
- ☐ Data Center Bridging
- ☐ Direct Play
- ☐ Enhanced Storage
- ☐ Failover Clustering
- ☒ Group Policy Management
- ☐ Host Guardian Hyper-V Support
- ☐ I/O Quality of Service
- ☐ IIS Hostable Web Core
- ☐ Internet Printing Client
- ☐ IP Address Management (IPAM) Server
- ☐ iSNS Server service

## 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.

&lt; Previous

Next &gt;

Install

Cancel

## Active Directory Domain Services

DESTINATION SERVER  
DC

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](#)

&lt; Previous

Next &gt;

Install

Cancel

## Confirm installation selections

DESTINATION SERVER  
DC

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](#)

&lt; Previous

Next &gt;

Install

Cancel

## Installation progress

DESTINATION SERVER  
DC

Before You Begin

Installation Type

Server Selection

Server Roles


Features

AD DS

Confirmation

Results

View installation progress

 Feature installation

Installation started on DC

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



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](#)

&lt; Previous

Next &gt;

Close

Cancel

## Installation progress

DESTINATION SERVER  
DC[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 DC.

**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



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](#)

&lt; Previous

Next &gt;

Close

Cancel

## Deployment Configuration

TARGET SERVER  
DC**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:

RAMLAN.CA

[More about deployment configurations](#)

&lt; Previous

Next &gt;

Install

Cancel

## Domain Controller Options

TARGET SERVER  
DC

Deployment Configuration

Domain Controller Options

DNS Options

Additional Options

Paths

Review Options

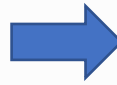
Prerequisites Check

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](#)

Even though, I installed Server 2019, I don't have the option to select Windows Server 2019 for Forest & Domain Functional Level. MS comment is Windows Server 2019 should be called Windows Server 2016 v1809

&lt; Previous

Next &gt;

Install

Cancel

## DNS Options

TARGET SERVER  
DC

⚠ 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

DNS Options



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 "RAMLAN.CA". Otherwise, no action is required.

OK

[More about DNS delegation](#)

&lt; Previous

Next &gt;

Install

Cancel

## Additional Options

TARGET SERVER  
DC

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:

RAMLAN

[More about additional options](#)

&lt; Previous

Next &gt;

Install

Cancel

## Paths

TARGET SERVER  
DC

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](#)

&lt; Previous

Next &gt;

Install

Cancel

## Review Options

TARGET SERVER  
DC

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 "RAMLAN.CA". This is also the name of the new forest.

The NetBIOS name of the domain: RAMLAN

Forest Functional Level: Windows Server 2016

Domain Functional Level: Windows Server 2016

Additional Options:

Global catalog: Yes

DNS Server: Yes

Create DNS Delegation: No

## Review Options

TARGET SERVER  
DC

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

## Review your selections:

Create DNS Delegation: No

Database folder: C:\Windows\NTDS

Log file folder: C:\Windows\NTDS

SYSVOL folder: C:\Windows\SYSVOL

The DNS Server service will be configured on this computer.

This computer will be configured to use this DNS server as its preferred DNS server.

The password of the new domain Administrator will be the same as the password of the local Administrator of this computer.

These settings can be exported to a Windows PowerShell script to automate additional installations

[View script](#)[More about installation options](#)

&lt; Previous

Next &gt;

Install

Cancel

## Prerequisites Check

TARGET SERVER  
DC

✓ 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 2019 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>).

⚠ This computer has at least one physical network adapter that does not have static IP address(es) assigned to its IP Properties. If both IPv4 and IPv6 are enabled for a network adapter, both IPv4 and IPv6 static IP addresses should be assigned to both IPv4 and IPv6 Properties of the physical network adapter. Such static IP address(es) assignment should be done to all the physical network adapters for reliable Domain Name System

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

[More about prerequisites](#)

&lt; Previous

Next &gt;

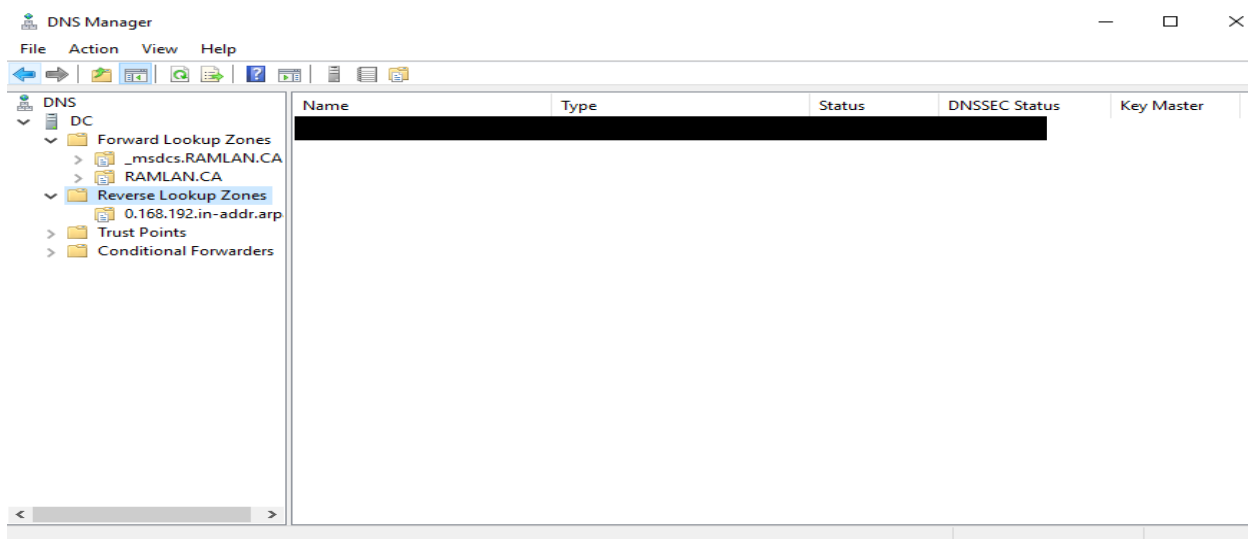
Install

Cancel

After ADDS is installed system will restart.

**Create Reverse DNS:**

Open DNS Manager and select Reverse Lookup Zone – Right Click New Zone





## Welcome to the New Zone Wizard

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.

&lt; Back

Next &gt;

Cancel

### 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)

&lt; Back

Next &gt;

Cancel



**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: RAMLAN.CA
- ☒ To all DNS servers running on domain controllers in this domain: RAMLAN.CA
- ☐ To all domain controllers in this domain (for Windows 2000 compatibility): RAMLAN.CA
- ☐ To all domain controllers specified in the scope of this directory partition:

&lt; Back

Next &gt;

Cancel

**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

&lt; Back

Next &gt;

Cancel

## New Zone Wizard



### 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:

192 .168 .0

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:

0.168.192.in-addr.arpa

< Back

Next >

Cancel

## New Zone Wizard



### 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

## New Zone Wizard



### Completing the New Zone Wizard

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

Name: 0.168.192.in-addr.arpa  
Type: Active Directory-Integrated Primary  
Lookup type: Reverse

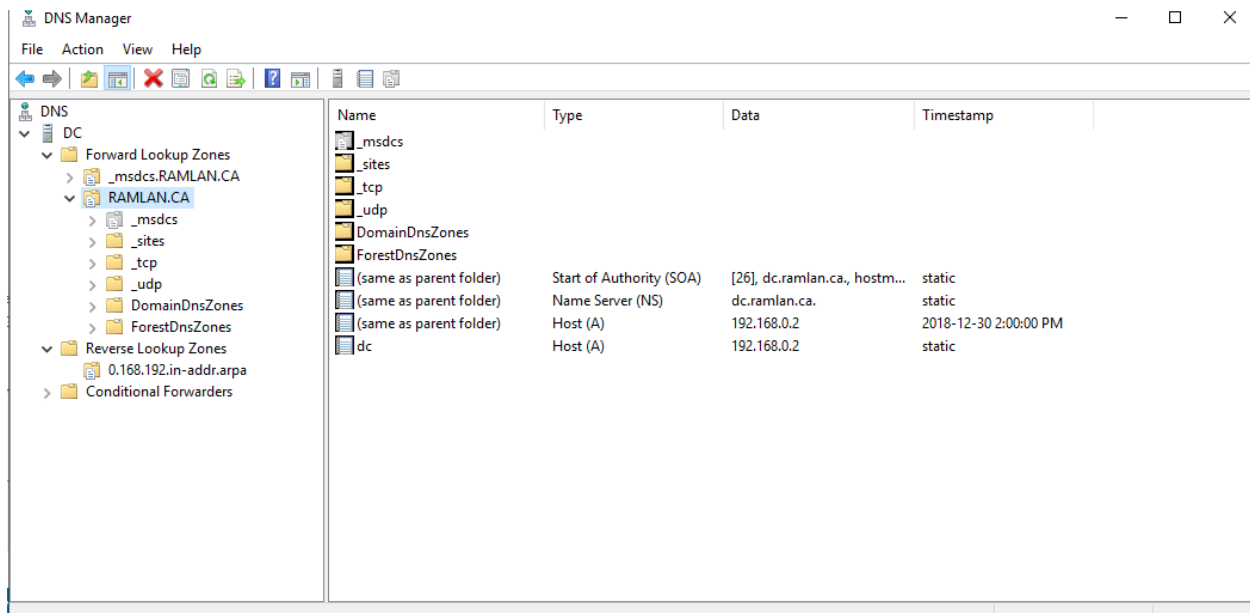
Note: You should now add records to the zone or ensure that records are updated dynamically. You can then verify name resolution using nslookup.

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

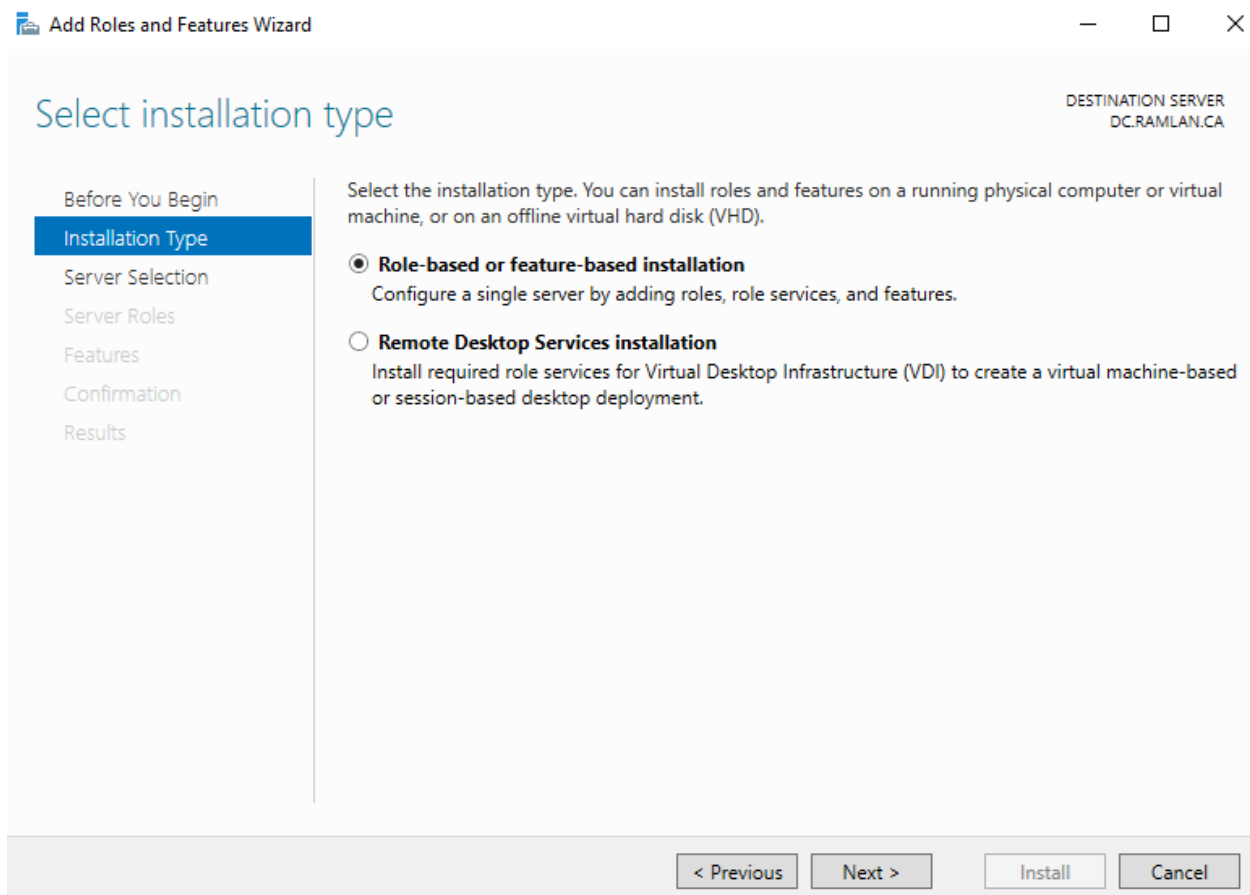
< Back

Finish

Cancel



## DHCP Role:



## Select destination server

DESTINATION SERVER  
DC.RAMLAN.CA

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: <input type="text"/>		
Name	IP Address	Operating System
DC.RAMLAN.CA	192.168.0.2	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.

&lt; Previous

Next &gt;

Install

Cancel

## Select server roles

DESTINATION SERVER  
DC.RAMLAN.CA

Before You Begin

Installation Type

Server Selection

Server Roles

Features

DHCP Server

Confirmation

Results

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

## Roles

- ☐ Active Directory Certificate Services
- ☒ Active Directory Domain Services (Installed)
- ☐ Active Directory Federation Services
- ☐ Active Directory Lightweight Directory Services
- ☐ Active Directory Rights Management Services
- ☐ Device Health Attestation
- ☒ DHCP Server
- ☒ DNS Server (Installed)
- ☐ Fax Server
- ☒ File and Storage Services (2 of 12 installed)
- ☐ Host Guardian Service
- ☒ Hyper-V (Installed)
- ☐ 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

## Description

Dynamic Host Configuration Protocol (DHCP) Server enables you to centrally configure, manage, and provide temporary IP addresses and related information for client computers.

&lt; Previous

Next &gt;

Install

Cancel

## Select features

DESTINATION SERVER  
DC.RAMLAN.CA

Before You Begin

Installation Type

Server Selection

Server Roles

Features

DHCP Server

Confirmation

Results

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

## Features

- ☒ .NET Framework 3.5 Features (1 of 3 installed)
- ☒ .NET Framework 4.7 Features (2 of 7 installed)
- ☐ Background Intelligent Transfer Service (BITS)
- ☐ BitLocker Drive Encryption
- ☐ BitLocker Network Unlock
- ☐ BranchCache
- ☒ Client for NFS (Installed)
- ☐ Containers
- ☐ Data Center Bridging
- ☐ Direct Play
- ☐ Enhanced Storage
- ☐ Failover Clustering
- ☒ Group Policy Management (Installed)
- ☐ Host Guardian Hyper-V Support
- ☐ I/O Quality of Service
- ☐ IIS Hostable Web Core
- ☐ Internet Printing Client
- ☐ IP Address Management (IPAM) Server
- ☐ iSNS Server service

## 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.

&lt; Previous

Next &gt;

Install

Cancel

## DHCP Server

DESTINATION SERVER  
DC.RAMLAN.CA

Before You Begin

Installation Type

Server Selection

Server Roles

Features

DHCP Server

Confirmation

Results

The Dynamic Host Configuration Protocol allows servers to assign, or lease, IP addresses to computers and other devices that are enabled as DHCP clients. Deploying a DHCP server on the network provides computers and other TCP/IP-based network devices with valid IP addresses and the additional configuration parameters these devices need, called DHCP options. This allows computers and devices to connect to other network resources, such as DNS servers, WINS servers, and routers.

## Things to note:

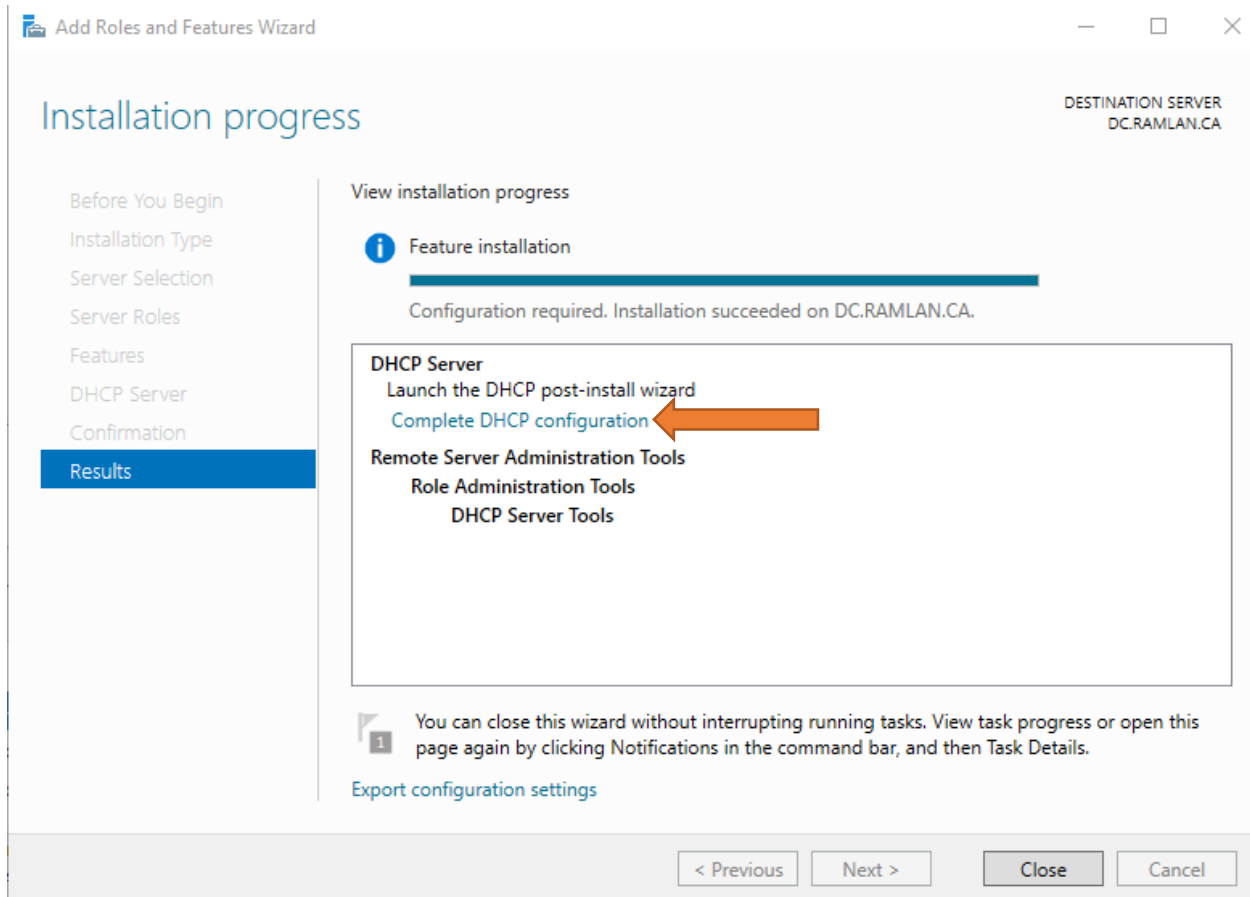
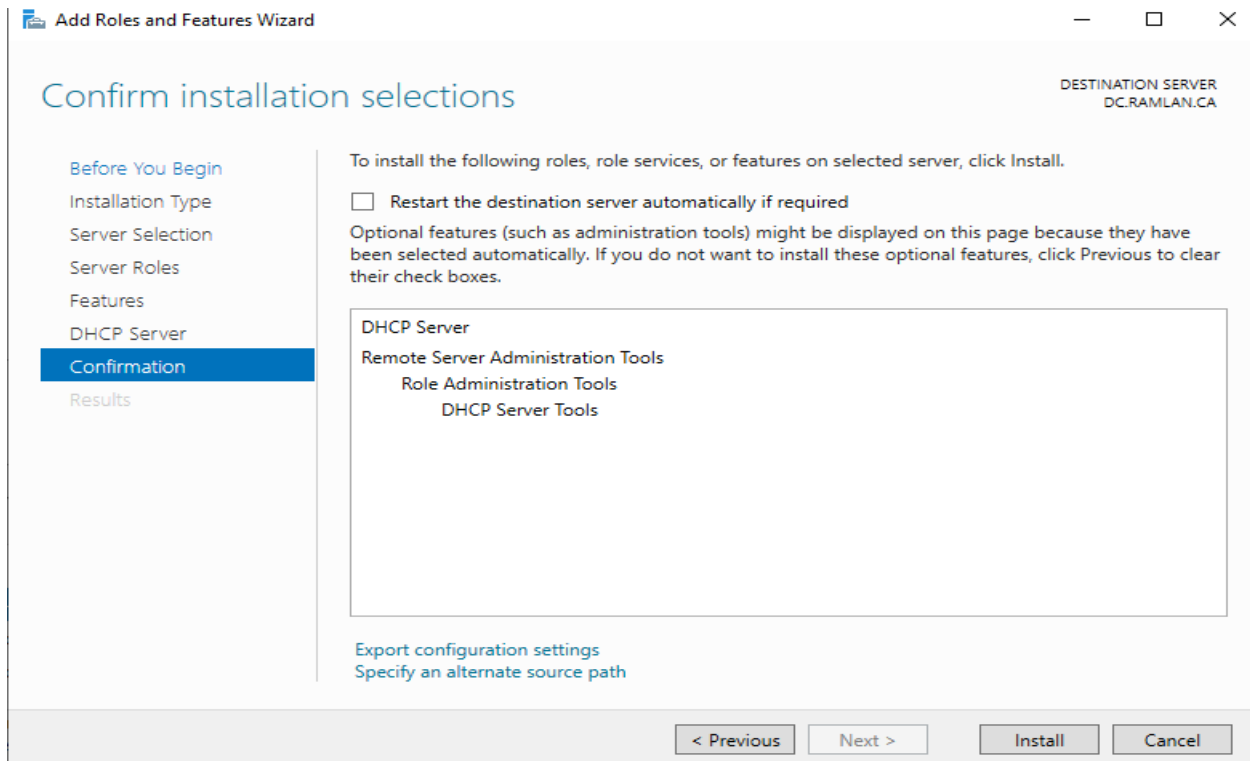
- You should configure at least one static IP address on this computer.
- Before you install DHCP Server, you should plan your subnets, scopes and exclusions. Store the plan in a safe place for later reference.

&lt; Previous

Next &gt;

Install

Cancel



## Description

Description

Authorization

Summary

The following steps will be performed to complete the configuration of the DHCP Server on the target computer:

Create the following security groups for delegation of DHCP Server Administration.

- DHCP Administrators
- DHCP Users

Authorize DHCP server on target computer (if domain joined).

< Previous

Next >

Commit

Cancel

## Authorization

Description

Authorization

Summary

Specify the credentials to be used to authorize this DHCP server in AD DS.

☒ Use the following user's credentials

User Name:

☐ Use alternate credentials

UserName:

☐ Skip AD authorization

< Previous

Next >

Commit

Cancel

## Summary

Description

Authorization

Summary

The status of the post install configuration steps are indicated below:

Creating security groups ..... Done

Please restart the DHCP server service on the target computer for the security groups to be effective.

Authorizing DHCP server ..... Done

&lt; Previous

Next &gt;

Close

Cancel

### DHCP Scope:

#### Open DHCP Manager

The screenshot shows the DHCP Manager console window. The left pane displays a tree view with the following structure:

- DHCP
  - dc.ramlan.ca
    - IPv4 (selected)
    - Server Options
    - Policies
    - Filters
    - IPv6

The main pane displays the 'Add a Scope' task with an information icon. The text reads:

A scope is a range of IP addresses assigned to computers requesting a dynamic IP address. You must create and configure a scope before dynamic IP addresses can be assigned.

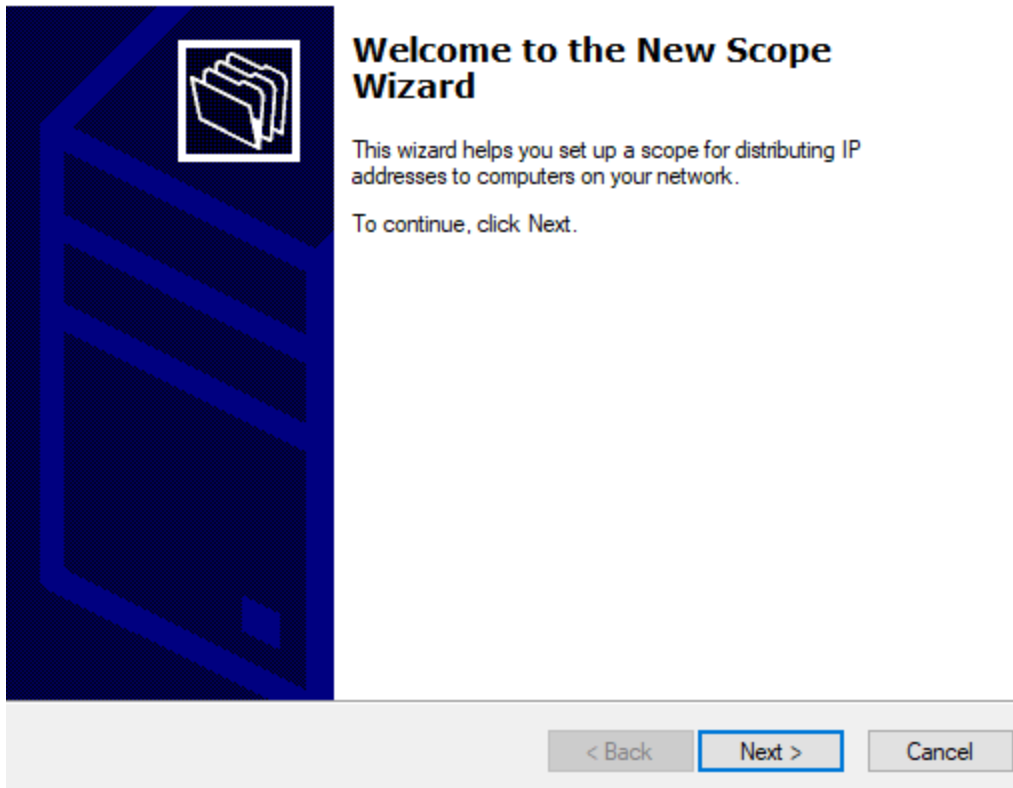
To add a new scope, on the Action menu, click New Scope.

For more information about setting up a DHCP server, see online Help.

The right pane, titled 'Actions', shows a list with 'IPv4' selected and a 'More Actions' link below it.



## New Scope Wizard



**Welcome to the New Scope Wizard**

This wizard helps you set up a scope for distributing IP addresses to computers on your network.

To continue, click Next.

< Back   Next >   Cancel

## New Scope Wizard

### Scope Name

You have to provide an identifying scope name. You also have the option of providing a description.



Type a name and description for this scope. This information helps you quickly identify how the scope is to be used on your network.

Name:

Description:

< Back

Next >

Cancel

## New Scope Wizard

### IP Address Range

You define the scope address range by identifying a set of consecutive IP addresses.



Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address:

End IP address:

Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

< Back   Next >   Cancel

## New Scope Wizard

### Add Exclusions and Delay

Exclusions are addresses or a range of addresses that are not distributed by the server. A delay is the time duration by which the server will delay the transmission of a DHCP OFFER message.



Type the IP address range that you want to exclude. If you want to exclude a single address, type an address in Start IP address only.

Start IP address:    End IP address:    Add

Excluded address range:

  Remove

Subnet delay in milli second:

< Back   Next >   Cancel

## New Scope Wizard

### Lease Duration

The lease duration specifies how long a client can use an IP address from this scope.



Lease durations should typically be equal to the average time the computer is connected to the same physical network. For mobile networks that consist mainly of portable computers or dial-up clients, shorter lease durations can be useful. Likewise, for a stable network that consists mainly of desktop computers at fixed locations, longer lease durations are more appropriate.

Set the duration for scope leases when distributed by this server.

Limited to:

Days:	Hours:	Minutes:
<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

< Back

Next >

Cancel

## New Scope Wizard

### Configure DHCP Options

You have to configure the most common DHCP options before clients can use the scope.



When clients obtain an address, they are given DHCP options such as the IP addresses of routers (default gateways), DNS servers, and WINS settings for that scope.

The settings you select here are for this scope and override settings configured in the Server Options folder for this server.

Do you want to configure the DHCP options for this scope now?

- ☒ Yes, I want to configure these options now
- ☐ No, I will configure these options later

< Back

Next >

Cancel

## New Scope Wizard

### Router (Default Gateway)

You can specify the routers, or default gateways, to be distributed by this scope.



To add an IP address for a router used by clients, enter the address below.

IP address:

Add

192.168.0.1

Remove

Up

Down

< Back

Next >

Cancel

## New Scope Wizard

### Domain Name and DNS Servers

The Domain Name System (DNS) maps and translates domain names used by clients on your network.



You can specify the parent domain you want the client computers on your network to use for DNS name resolution.

Parent domain: RAMLAN.CA

To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.

Server name:

Resolve

IP address:

Add

192.168.0.2

Remove

Up

Down

< Back

Next >

Cancel

## New Scope Wizard

### Domain Name and DNS Servers

The Domain Name System (DNS) maps and translates domain names used by clients on your network.



You can specify the parent domain you want the client computers on your network to use for DNS name resolution.

Parent domain:

To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.

Server name:

IP address:

## New Scope Wizard

### WINS Servers

Computers running Windows can use WINS servers to convert NetBIOS computer names to IP addresses.



Entering server IP addresses here enables Windows clients to query WINS before they use broadcasts to register and resolve NetBIOS names.

Server name:

IP address:

To change this behavior for Windows DHCP clients modify option 046, WINS/NBT Node Type, in Scope Options.

## New Scope Wizard

### Activate Scope

Clients can obtain address leases only if a scope is activated.



Do you want to activate this scope now?

- ☒ Yes, I want to activate this scope now
- ☐ No, I will activate this scope later

< Back

Next >

Cancel

## New Scope Wizard



### Completing the New Scope Wizard

You have successfully completed the New Scope wizard.

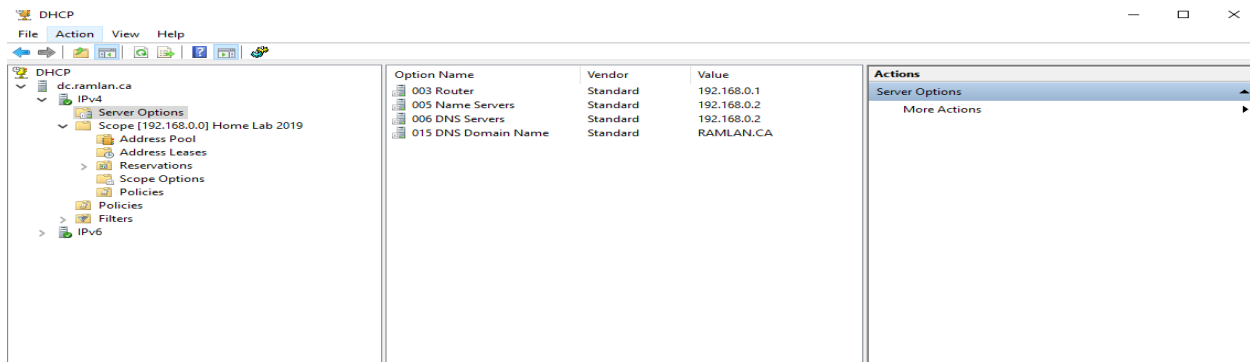
To provide high availability for this scope, configure failover for the newly added scope by right clicking on the scope and clicking on configure failover.

To close this wizard, click Finish.

< Back


Finish

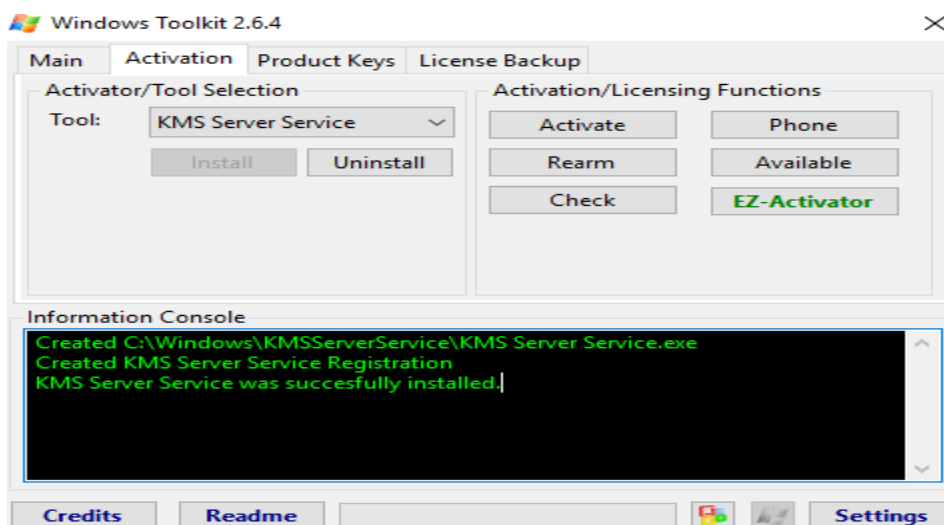
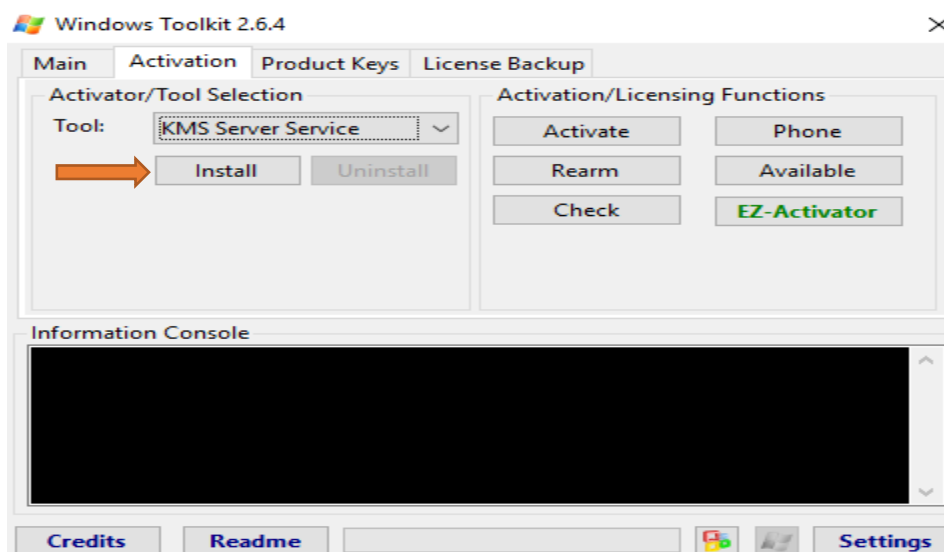
Cancel



## KMS Configuration:

We have to open MTK 2.6.4 & install AutoKMS service. You can Google for MTK 2.6.4 & download.

 [Microsoft Toolkit.exe](#) [2018-05-04 8:35 PM](#) [Application](#) [57,806 KB](#)



## DNS configuration for KMS Service:

Open DNS Manager and complete the following:

Right-click on the \_tcp folder and select Other New Records.

Select Service Location (SRV) as the new record type.

Fill in the following information for the new record:

Service: \_VLMCS

(Note: This is not in drop-down list, so you need to type. Include underscore at the beginning.)

Protocol: \_tcp

Port: 1688

Priority: 10

Host offering the service: hostname

New Resource Record

Service Location (SRV)

Domain: \_tcp.RAMLAN.CA

Service: \_VLMCS

Protocol: \_tcp

Priority: 10

Weight: 0

Port number: 1688

Host offering this service: DC.RAMLAN.CA

☒ 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 Help

DNS Manager

File Action View Help

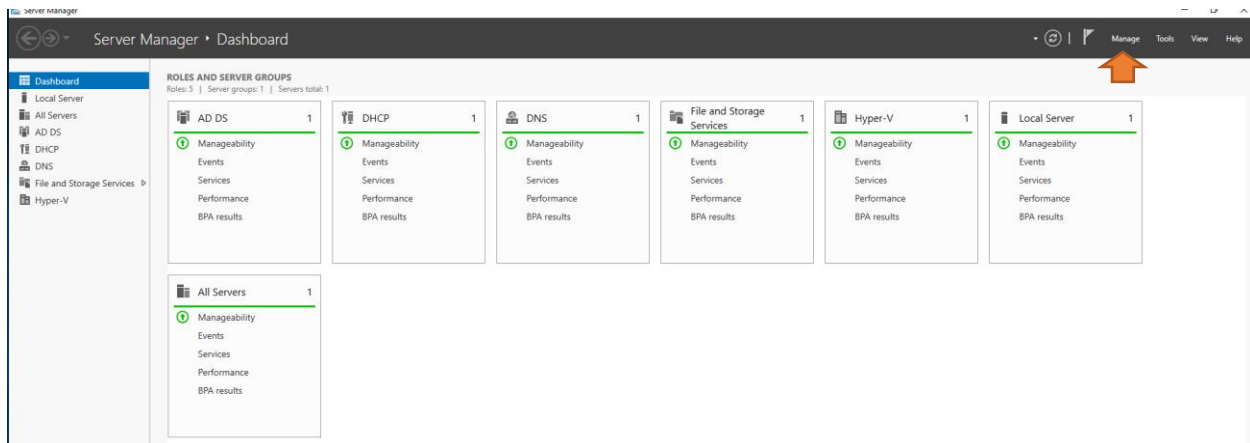
Name	Type	Data	Timestamp
_gc	Service Location (SRV)	[0][100][3268] DC.RAMLA...	2018-12-30 4:00:00 PM
_kerberos	Service Location (SRV)	[0][100][88] DC.RAMLAN....	2018-12-30 4:00:00 PM
_kpasswd	Service Location (SRV)	[0][100][464] DC.RAMLAN...	2018-12-30 4:00:00 PM
_ldap	Service Location (SRV)	[0][100][389] DC.RAMLAN...	2018-12-30 4:00:00 PM
_VLMCS	Service Location (SRV)	[10][0][1688] DC.RAMLAN...	static

With above configuration, we can activate Servers and Workstations automatically



## Certificate Authority:

Now we will install CA role which we might require to issue self signed SSL certificate for internal use.



Add Roles and Features Wizard

## Select installation type

DESTINATION SERVER  
DC.RAMLAN.CA

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

## Select destination server

DESTINATION SERVER  
DC.RAMLAN.CA

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
DC.RAMLAN.CA	192.168.0.2	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.

&lt; Previous

Next &gt;

Install

Cancel

## Select server roles

DESTINATION SERVER  
DC.RAMLAN.CA

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD CS

Role Services

Confirmation

Results

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

## Roles

- ☒ Active Directory Certificate Services
- ☒ Active Directory Domain Services (Installed)
- ☐ Active Directory Federation Services
- ☐ Active Directory Lightweight Directory Services
- ☐ Active Directory Rights Management Services
- ☐ Device Health Attestation
- ☒ DHCP Server (Installed)
- ☒ DNS Server (Installed)
- ☐ Fax Server
- ☒ File and Storage Services (2 of 12 installed)
- ☐ Host Guardian Service
- ☒ Hyper-V (Installed)
- ☐ 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

## 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.

&lt; Previous

Next &gt;

Install

Cancel

## Select features

DESTINATION SERVER  
DC.RAMLAN.CA

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD CS

Role Services

Confirmation

Results

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

## Features

- ☒ .NET Framework 3.5 Features (1 of 3 installed)
- ☒ .NET Framework 4.7 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 (Installed)
- ☐ Host Guardian Hyper-V Support
- ☐ I/O Quality of Service
- ☐ IIS Hostable Web Core
- ☐ Internet Printing Client
- ☐ IP Address Management (IPAM) Server
- ☐ iSNS Server service

## 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.

&lt; Previous

Next &gt;

Install

Cancel

## Active Directory Certificate Services

DESTINATION SERVER  
DC.RAMLAN.CA

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD CS

Role Services

Confirmation

Results

Active Directory Certificate Services (AD CS) provides the certificate infrastructure to enable scenarios such as secure wireless networks, virtual private networks, Internet Protocol Security (IPSec), Network Access Protection (NAP), encrypting file system (EFS) and smart card log on.

Things to note:

- The name and domain settings of this computer cannot be changed after a certification authority (CA) has been installed. If you want to change the computer name, join a domain, or promote this server to a domain controller, complete these changes before installing the CA. For more information, see certification authority naming.

&lt; Previous

Next &gt;

Install

Cancel

## Select role services

DESTINATION SERVER  
DC.RAMLAN.CA[Before You Begin](#)[Installation Type](#)[Server Selection](#)[Server Roles](#)[Features](#)[AD CS](#)**Role Services**[Web Server Role \(IIS\)](#)[Role Services](#)[Confirmation](#)[Results](#)

Select the role services to install for Active Directory Certificate Services

## Role services

- ☒ Certification Authority
- ☐ Certificate Enrollment Policy Web Service
- ☐ Certificate Enrollment Web Service
- ☒ **Certification Authority Web Enrollment**
- ☐ Network Device Enrollment Service
- ☐ Online Responder

## Description

Certification Authority Web Enrollment provides a simple Web interface that allows users to perform tasks such as request and renew certificates, retrieve certificate revocation lists (CRLs), and enroll for smart card certificates.

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Next &gt;

Install

Cancel

## Web Server Role (IIS)

DESTINATION SERVER  
DC.RAMLAN.CA[Before You Begin](#)[Installation Type](#)[Server Selection](#)[Server Roles](#)[Features](#)[AD CS](#)[Role Services](#)**Web Server Role (IIS)**[Role Services](#)[Confirmation](#)[Results](#)

Web servers are computers that let you share information over the Internet, or through intranets and extranets. The Web Server role includes Internet Information Services (IIS) 10.0 with enhanced security, diagnostic and administration, a unified Web platform that integrates IIS 10.0, ASP.NET, and Windows Communication Foundation.

- The default installation for the Web Server (IIS) role includes the installation of role services that enable you to serve static content, make minor customizations (such as default documents and HTTP errors), monitor and log server activity, and configure static content compression.

[More information about Web Server IIS](#)

&lt; Previous

Next &gt;

Install

Cancel

## Select role services

DESTINATION SERVER  
DC.RAMLAN.CA

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD CS

Role Services

Web Server Role (IIS)

Role Services

Confirmation

Results

Select the role services to install for Web Server (IIS)

## Role services

- ☒ Web Server
  - ☒ Common HTTP Features
    - ☒ Default Document
    - ☒ Directory Browsing
    - ☒ HTTP Errors
    - ☒ Static Content
    - ☒ HTTP Redirection
    - ☐ WebDAV Publishing
  - ☒ Health and Diagnostics
    - ☒ HTTP Logging
    - ☐ Custom Logging
    - ☒ Logging Tools
    - ☐ ODBC Logging
    - ☒ Request Monitor
    - ☒ Tracing
  - ☒ Performance
    - ☒ Static Content Compression
    - ☐ Dynamic Content Compression
  - ☒ Security

## Description

Web Server provides support for HTML Web sites and optional support for ASP.NET, ASP, and Web server extensions. You can use the Web Server to host an internal or external Web site or to provide an environment for developers to create Web-based applications.

&lt; Previous

Next &gt;

Install

Cancel

## Confirm installation selections

DESTINATION SERVER  
DC.RAMLAN.CA

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD CS

Role Services

Web Server Role (IIS)

Role Services

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 Certificate Services
  - Certification Authority
  - Certification Authority Web Enrollment
- Remote Server Administration Tools
  - Role Administration Tools
    - Active Directory Certificate Services Tools
    - Certification Authority Management Tools
- Web Server (IIS)
  - Management Tools
    - IIS 6 Management Compatibility

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

&lt; Previous

Next &gt;

Install

Cancel

Add Roles and Features Wizard

DESTINATION SERVER  
DC.RAMLAN.CA

Installation progress

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD CS

Role Services

Web Server Role (IIS)

Role Services

Confirmation

Results

View installation progress

Feature installation

Configuration required. Installation succeeded on DC.RAMLAN.CA.

Active Directory Certificate Services

Additional steps are required to configure Active Directory Certificate Services on the destination server

[Configure Active Directory Certificate Services on the destination server](#)

Certification Authority

Certification Authority Web Enrollment

Remote Server Administration Tools

Role Administration Tools

Active Directory Certificate Services Tools

Certification Authority Management Tools

Web Server (IIS)

1

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

AD CS Configuration

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials

Role Services

Confirmation

Progress

Results

Specify credentials to configure role services

To install the following role services you must belong to the local Administrators group:

- Standalone certification authority
- Certification Authority Web Enrollment
- Online Responder

To install the following role services you must belong to the Enterprise Admins group:

- Enterprise certification authority
- Certificate Enrollment Policy Web Service
- Certificate Enrollment Web Service
- Network Device Enrollment Service

Credentials:

RAMLAN\Administrator

Change...

[More about AD CS Server Roles](#)

< Previous

Next >

Configure

Cancel

## Role Services

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials

Role Services

Setup Type

CA Type

Private Key

Cryptography

CA Name

Validity Period

Certificate Database

Confirmation

Progress

Results

## Select Role Services to configure

- ☒ Certification Authority
- ☒ Certification Authority Web Enrollment
- ☐ Online Responder
- ☐ Network Device Enrollment Service
- ☐ Certificate Enrollment Web Service
- ☐ Certificate Enrollment Policy Web Service

[More about AD CS Server Roles](#)

&lt; Previous

Next &gt;

Configure

Cancel

## Setup Type

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials

Role Services

Setup Type

CA Type

Private Key

Cryptography

CA Name

Validity Period

Certificate Database

Confirmation

Progress

Results

## Specify the setup type of the CA

Enterprise certification authorities (CAs) can use Active Directory Domain Services (AD DS) to simplify the management of certificates. Standalone CAs do not use AD DS to issue or manage certificates.

- ☒ Enterprise CA  
Enterprise CAs must be domain members and are typically online to issue certificates or certificate policies.
- ☐ Standalone CA  
Standalone CAs can be members or a workgroup or domain. Standalone CAs do not require AD DS and can be used without a network connection (offline).

[More about Setup Type](#)

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Next &gt;

Configure

Cancel

## CA Type

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials  
Role Services  
Setup Type  
**CA Type**  
Private Key  
    Cryptography  
    CA Name  
    Validity Period  
Certificate Database  
Confirmation  
Progress  
Results

## Specify the type of the CA

When you install Active Directory Certificate Services (AD CS), you are creating or extending a public key infrastructure (PKI) hierarchy. A root CA is at the top of the PKI hierarchy and issues its own self-signed certificate. A subordinate CA receives a certificate from the CA above it in the PKI hierarchy.

- ☒ Root CA  
Root CAs are the first and may be the only CAs configured in a PKI hierarchy.
- ☐ Subordinate CA  
Subordinate CAs require an established PKI hierarchy and are authorized to issue certificates by the CA above them in the hierarchy.

[More about CA Type](#)

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Next &gt;

Configure

Cancel

## Private Key

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials  
Role Services  
Setup Type  
CA Type  
**Private Key**  
    Cryptography  
    CA Name  
    Validity Period  
Certificate Database  
Confirmation  
Progress  
Results

## Specify the type of the private key

To generate and issue certificates to clients, a certification authority (CA) must have a private key.

- ☒ Create a new private key  
Use this option if you do not have a private key or want to create a new private key.
- ☐ Use existing private key  
Use this option to ensure continuity with previously issued certificates when reinstalling a CA.
- ☐ Select a certificate and use its associated private key  
Select this option if you have an existing certificate on this computer or if you want to import a certificate and use its associated private key.
- ☐ Select an existing private key on this computer  
Select this option if you have retained private keys from a previous installation or want to use a private key from an alternate source.

[More about Private Key](#)

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Next &gt;

Configure

Cancel



## Cryptography for CA

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials  
Role Services  
Setup Type  
CA Type  
Private Key  
**Cryptography**  
CA Name  
Validity Period  
Certificate Database  
Confirmation  
Progress  
Results

## Specify the cryptographic options

Select a cryptographic provider:

RSA#Microsoft Software Key Storage Provider

Key length:

2048

Select the hash algorithm for signing certificates issued by this CA:

SHA256  
SHA384  
SHA512  
SHA1  
MD5

☐ Allow administrator interaction when the private key is accessed by the CA.[More about Cryptography](#)

&lt; Previous

Next &gt;

Configure

Cancel

## CA Name

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials  
Role Services  
Setup Type  
CA Type  
Private Key  
Cryptography  
**CA Name**  
Validity Period  
Certificate Database  
Confirmation  
Progress  
Results

## Specify the name of the CA

Type a common name to identify this certification authority (CA). This name is added to all certificates issued by the CA. Distinguished name suffix values are automatically generated but can be modified.

Common name for this CA:

RAMLAN-DC-CA

Distinguished name suffix:

DC=RAMLAN,DC=CA

Preview of distinguished name:

CN=RAMLAN-DC-CA,DC=RAMLAN,DC=CA

[More about CA Name](#)

&lt; Previous

Next &gt;

Configure

Cancel

## Validity Period

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials

Role Services

Setup Type

CA Type

Private Key

Cryptography

CA Name

Validity Period

Certificate Database

Confirmation

Progress

Results

## Specify the validity period

Select the validity period for the certificate generated for this certification authority (CA):

 Years

CA expiration Date: 2023-12-30 7:05:00 PM

The validity period configured for this CA certificate should exceed the validity period for the certificates it will issue.

[More about Validity Period](#)

&lt; Previous

Next &gt;

Configure

Cancel

## CA Database

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials

Role Services

Setup Type

CA Type

Private Key

Cryptography

CA Name

Validity Period

Certificate Database

Confirmation

Progress

Results

## Specify the database locations

Certificate database location:

Certificate database log location:

[More about CA Database](#)

&lt; Previous

Next &gt;

Configure

Cancel

## Confirmation

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials

Role Services

Setup Type

CA Type

Private Key

Cryptography

CA Name

Validity Period

Certificate Database

Confirmation

Progress

Results

To configure the following roles, role services, or features, click Configure.

## ⤴ Active Directory Certificate Services

## Certification Authority

CA Type:	Enterprise Root
Cryptographic provider:	RSA#Microsoft Software Key Storage Provider
Hash Algorithm:	SHA256
Key Length:	2048
Allow Administrator Interaction:	Disabled
Certificate Validity Period:	2023-12-30 7:05:00 PM
Distinguished Name:	CN=RAMLAN-DC-CA,DC=RAMLAN,DC=CA
Certificate Database Location:	C:\Windows\system32\CertLog
Certificate Database Log Location:	C:\Windows\system32\CertLog

## Certification Authority Web Enrollment

&lt; Previous

Next &gt;

Configure

Cancel

## Results

DESTINATION SERVER  
DC.RAMLAN.CA

Credentials

Role Services

Setup Type

CA Type

Private Key

Cryptography

CA Name

Validity Period

Certificate Database

Confirmation

Progress

Results

The following roles, role services, or features were configured:

## ⤴ Active Directory Certificate Services

## Certification Authority

[More about CA Configuration](#)

✔ Configuration succeeded

## Certification Authority Web Enrollment

[More about Web Enrollment Configuration](#)

✔ Configuration succeeded

&lt; Previous

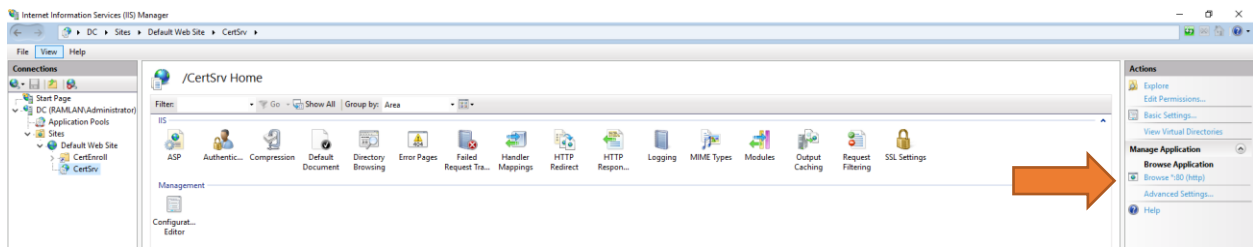
Next &gt;

Close

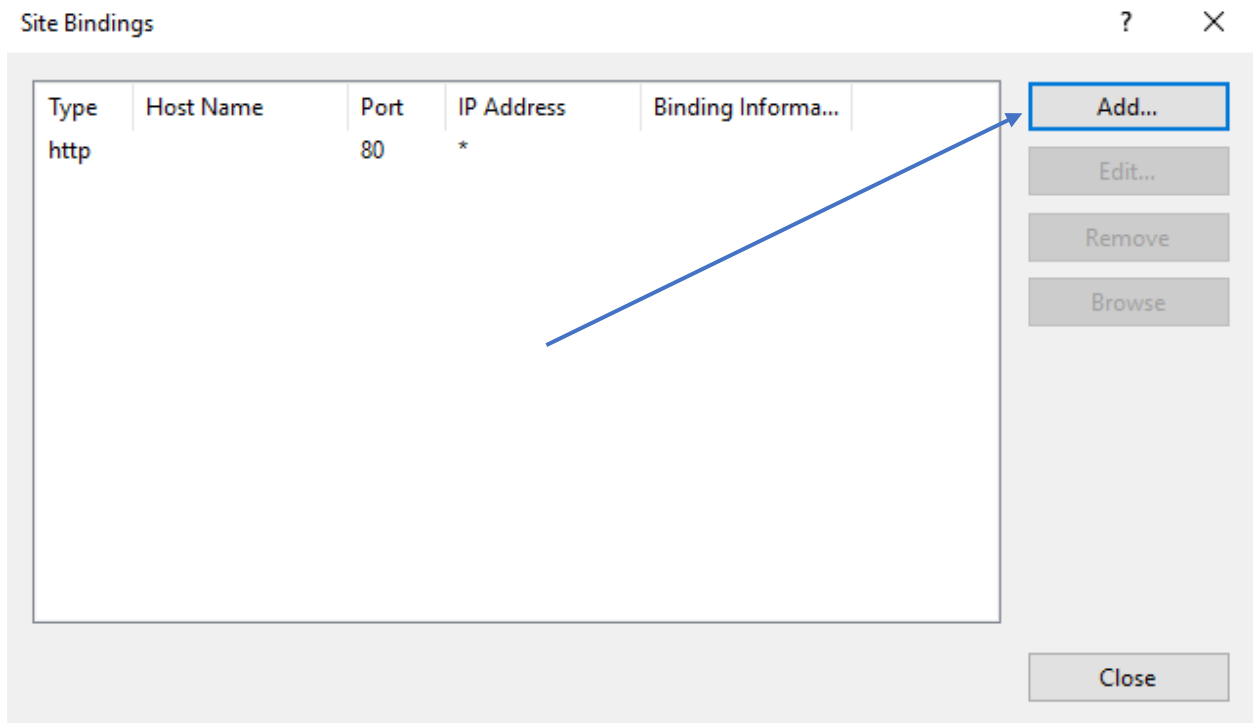
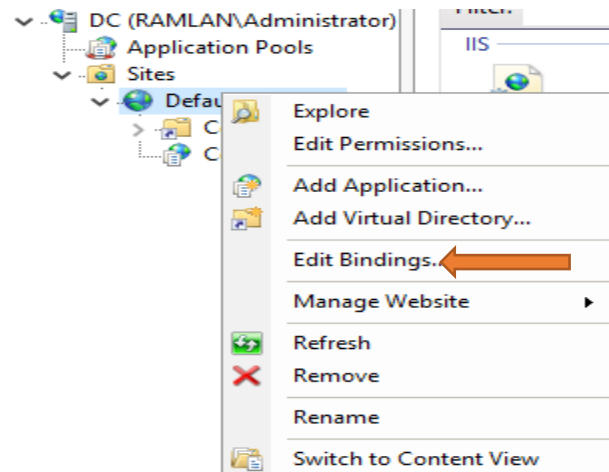
Cancel

## IIS Manager Binding:

Open IIS Manager – Go to CertSrv



If you want \*443 under Manage Application – do the following



**Add Site Binding**

Type: **https** IP address: **All Unassigned** Port: **443**

Host name:

☐ Require Server Name Indication

☐ Disable HTTP/2

☐ Disable OCSP Stapling

SSL certificate: **RAMLAN-DC-CA** **Select...** **View...**

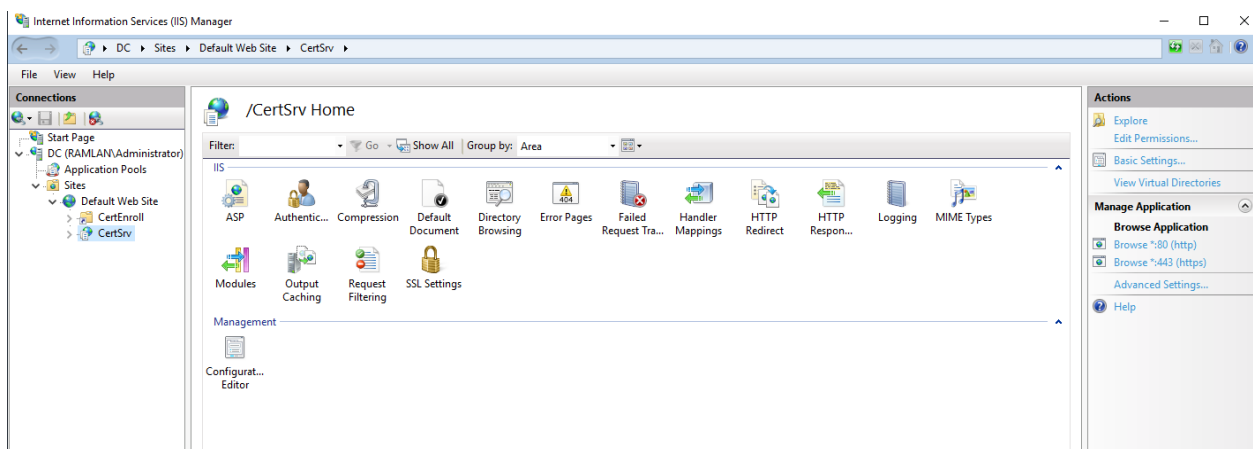
**OK** **Cancel**

**Site Bindings**

Type	Host Name	Port	IP Address	Binding Informa...
http		80	*	
https		443	*	

**Add...** **Edit...** **Remove** **Browse**

**Close**



With this we have completed a number of tasks on the Domain Controller.

Thanks

**Ram Lan**

**30<sup>th</sup> Dec 2018**