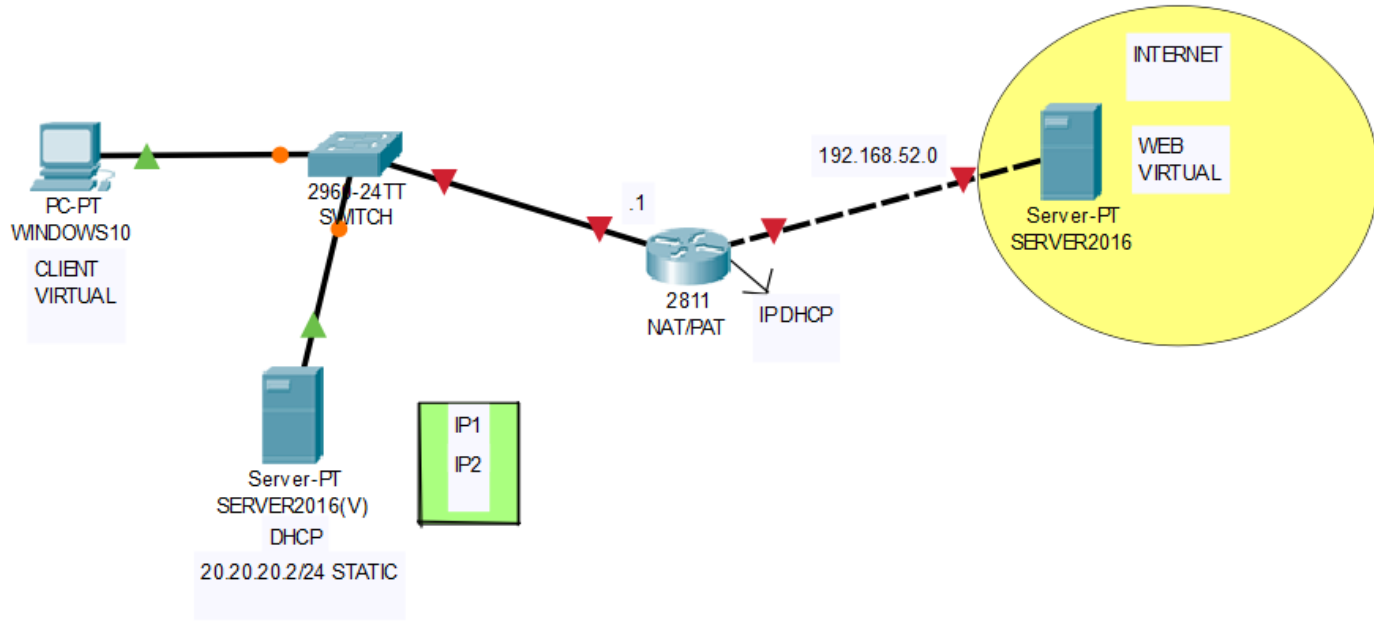

*Server 2016 Connect IIS Server (With DHCP
Server and Routing Protokol)*

1-) Connect IIS Server (With DHCP Server and Routing Protokol)

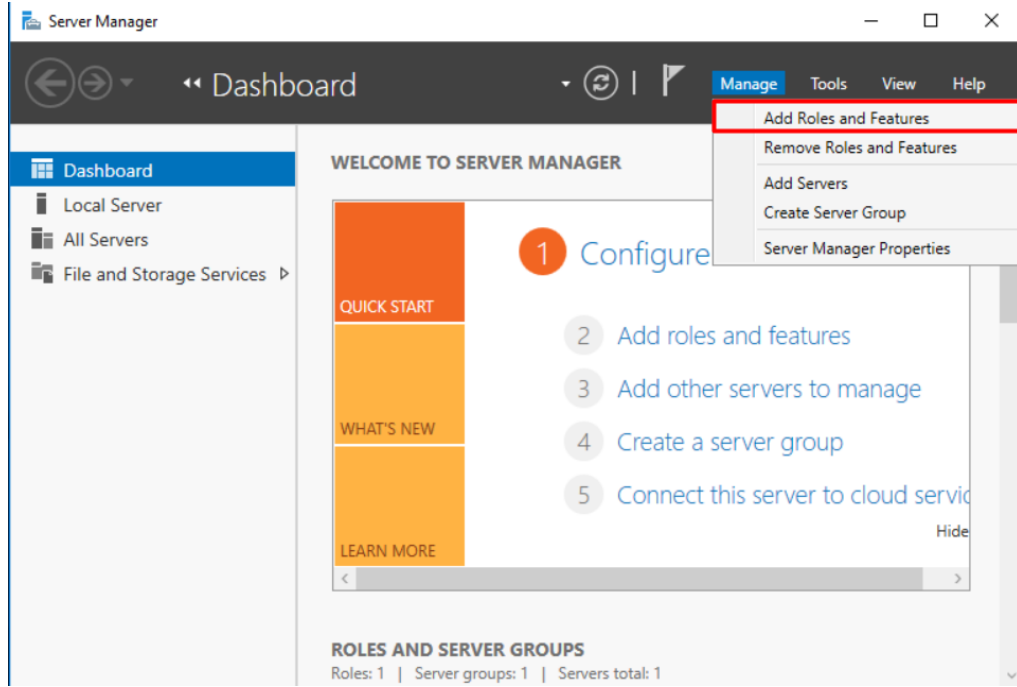
1a-) Amacımız;



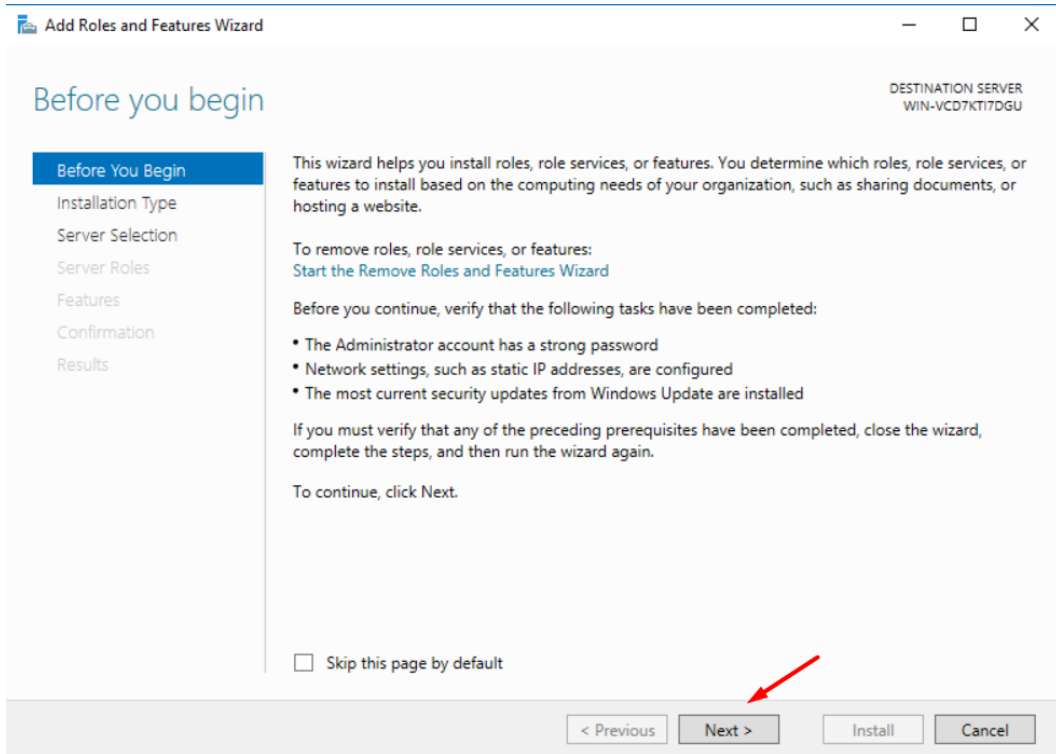
Görünen topolojimizde Windows 10 cihazımızı DHCP Server'ımızdan alacağı IP adresi ile, internet üzerinde kurulacak olan WEB Server'ımıza routing protokoller ile internete bağlayıp WEB Server'a bağlanmak.

1b-) DHCP Server Kurulumu

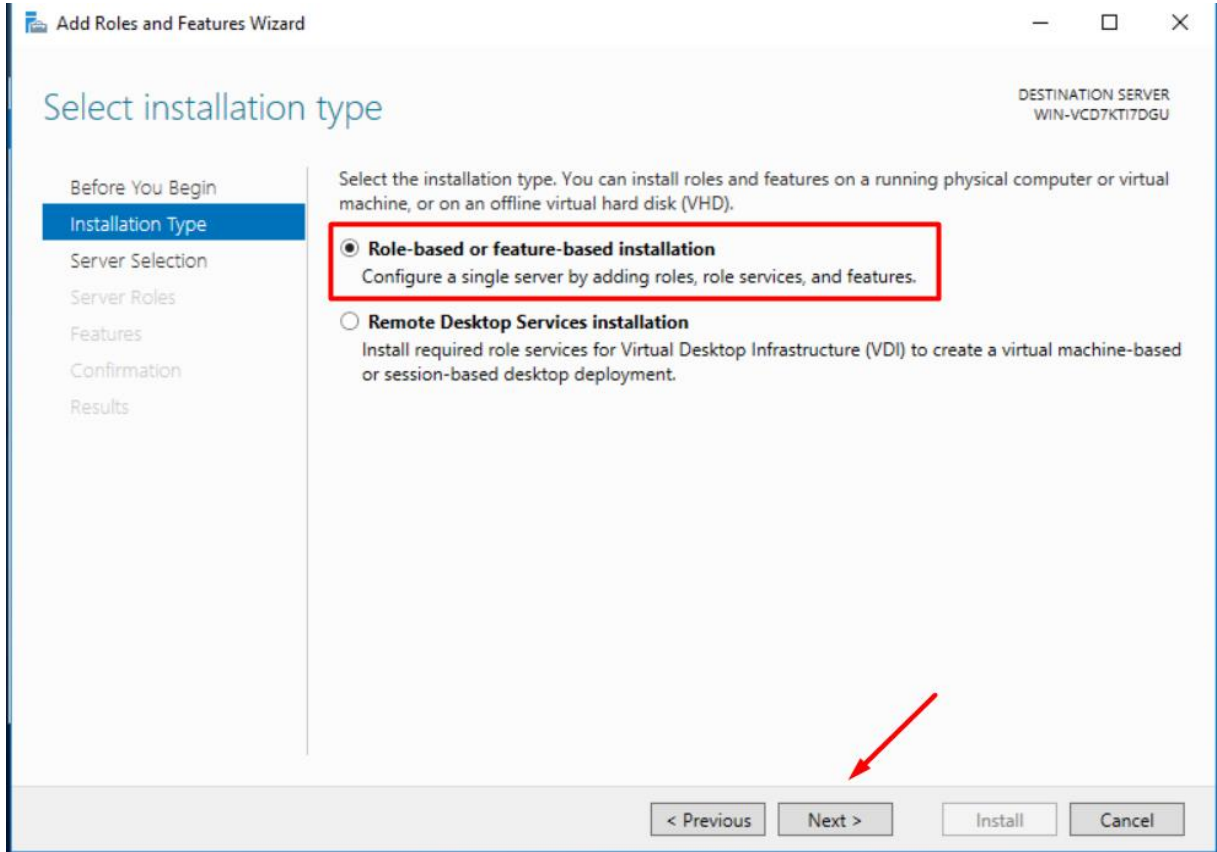
İşlem1-1b = DHCP Kurulumu için Windows Server 2016'da "Add Roles and Features" seçilir.



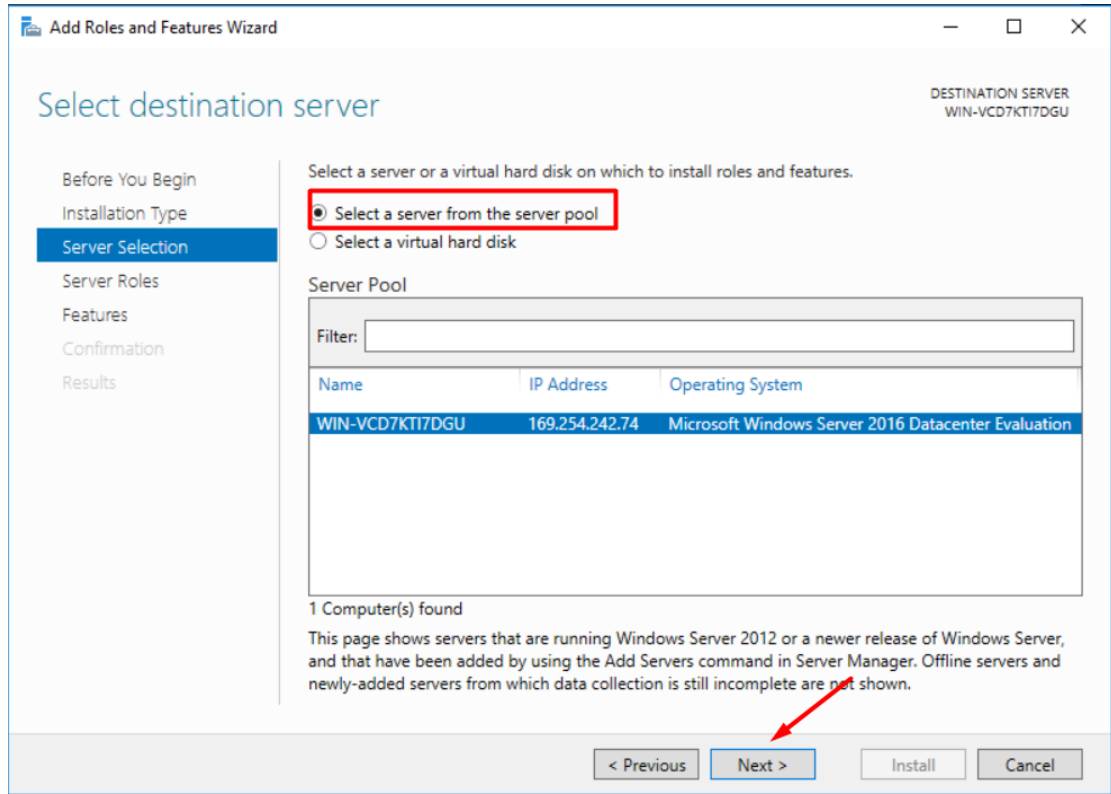
İşlem2-1b = Kurulum için "Installation Type"a gelinir.



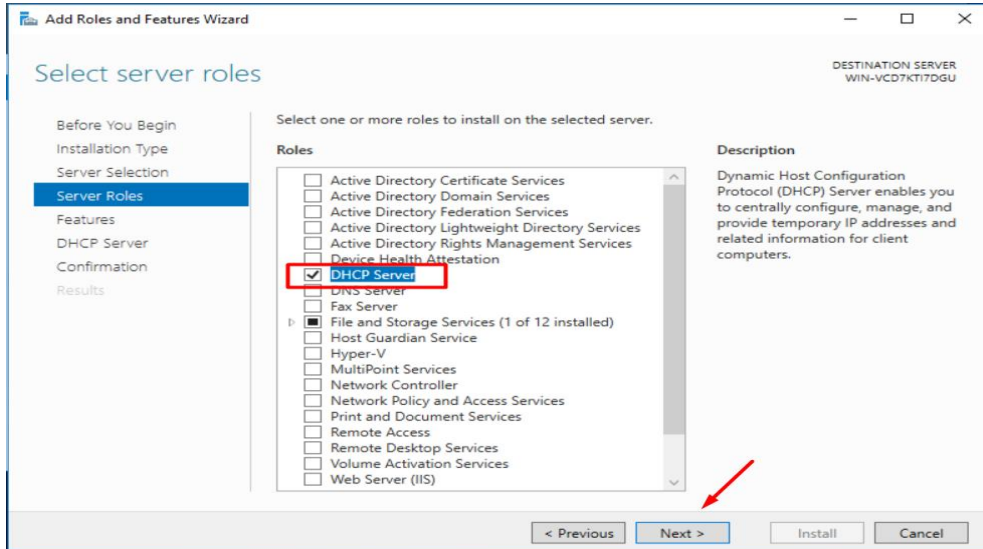
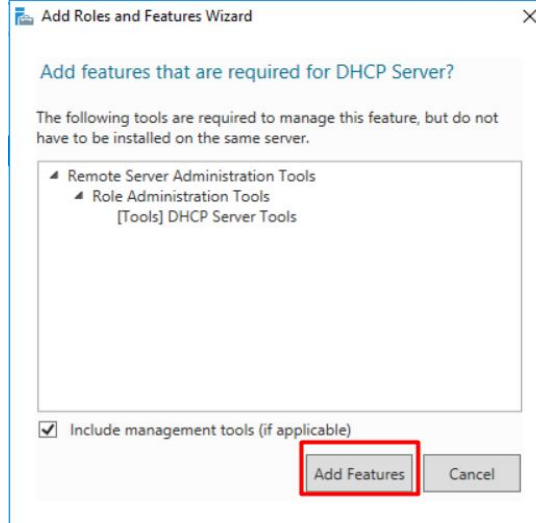
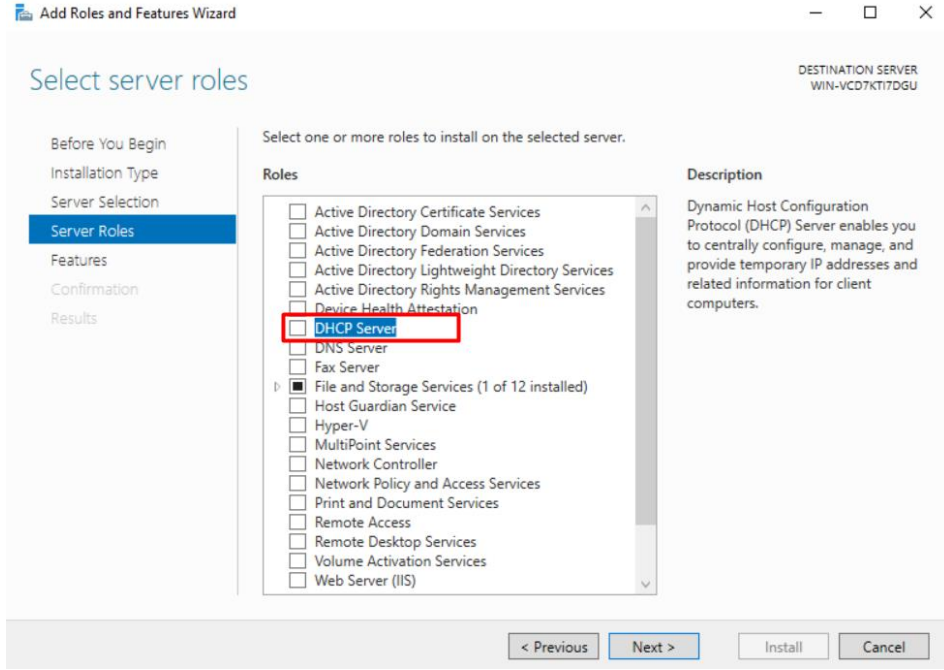
İşlem3-1c = "Role-Based" installation seçilir.



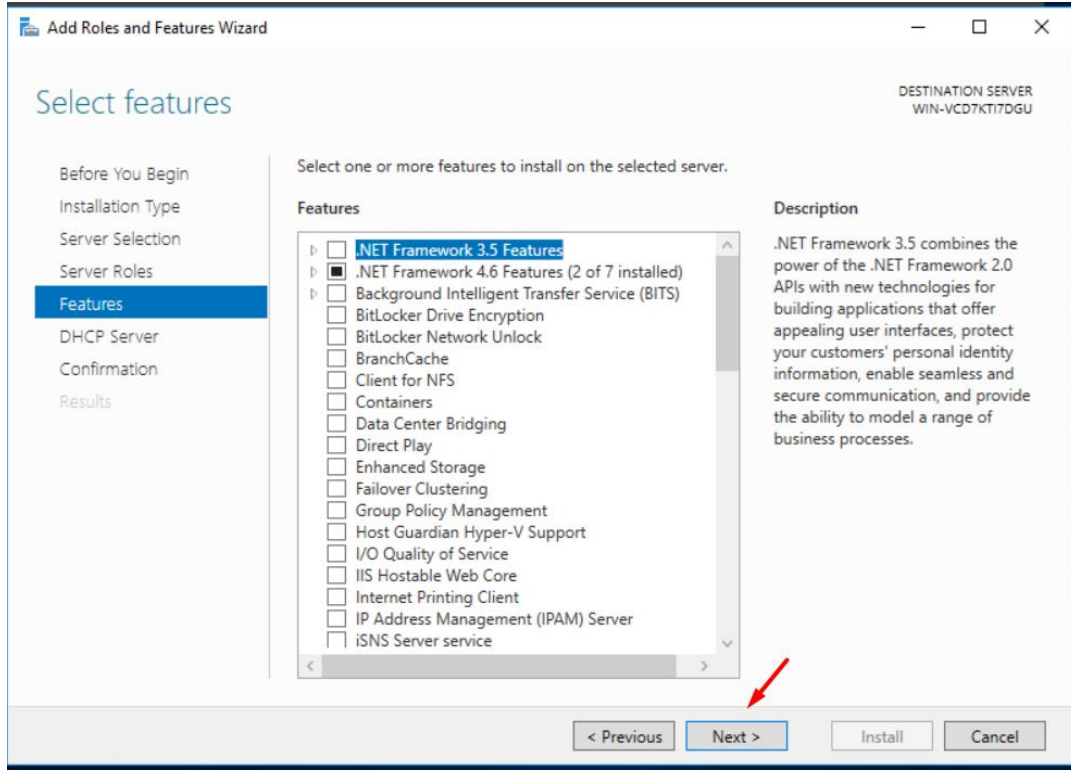
İşlem4-1b = Sanal cihazımız ve cihazın disk'i seçilir.



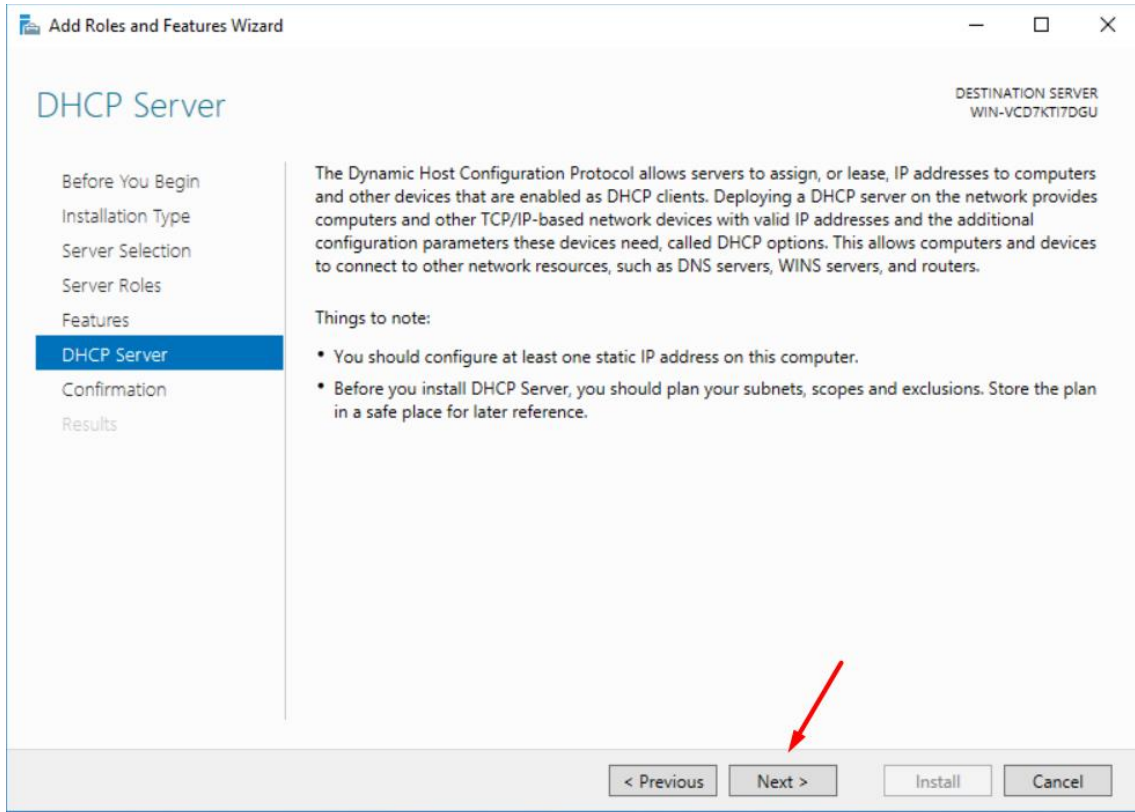
İşlem5-1b = “Server Roles” üzerinden “DHCP Server” Seçilir.



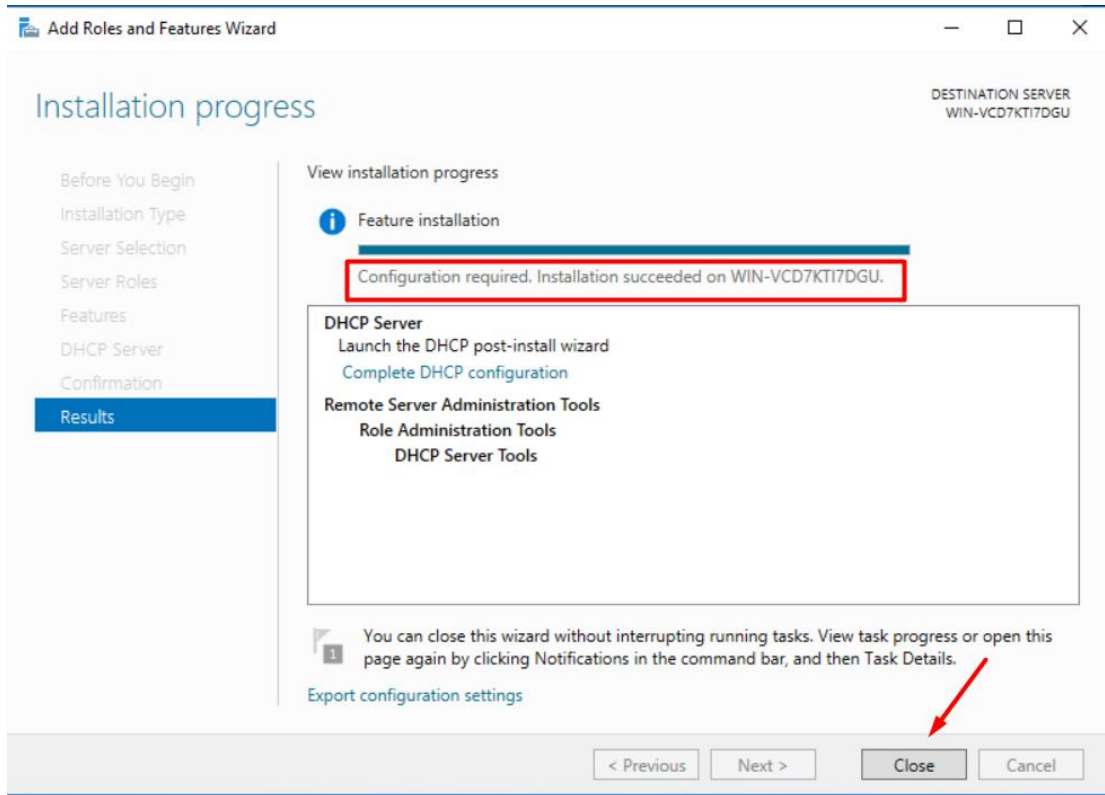
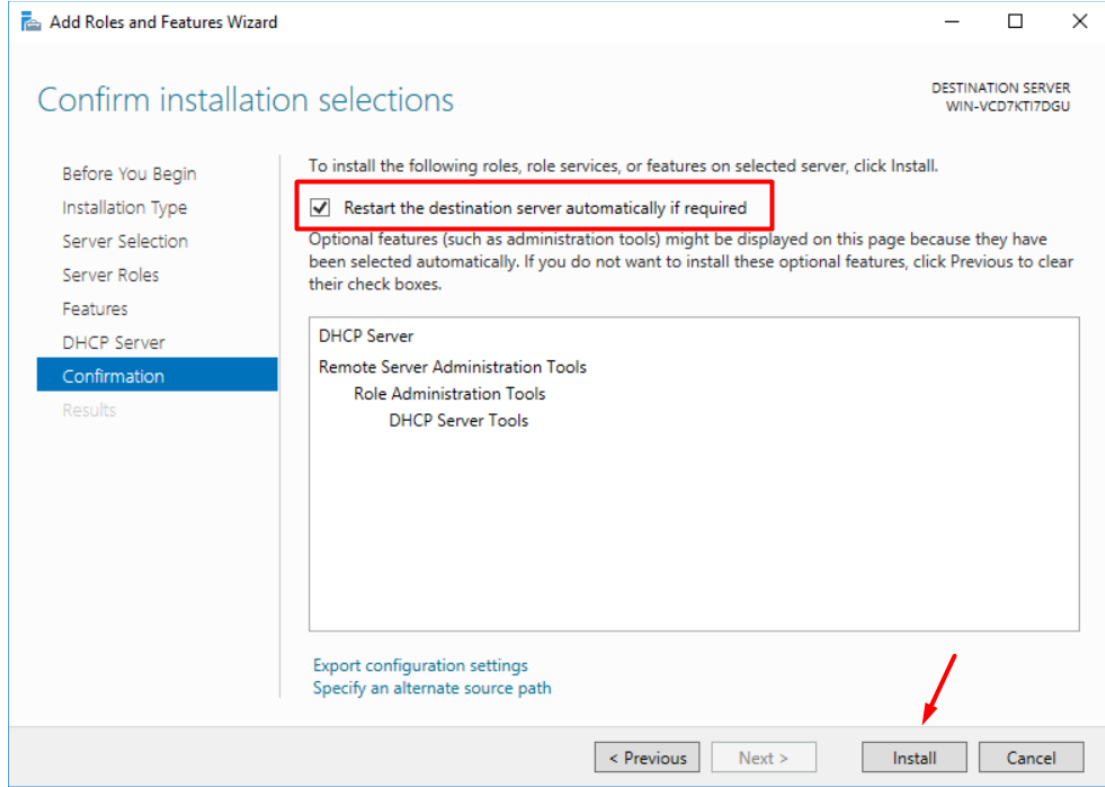
İşlem6-1b = “Features” kısmında bir seçim yapılmadan devam edilir.



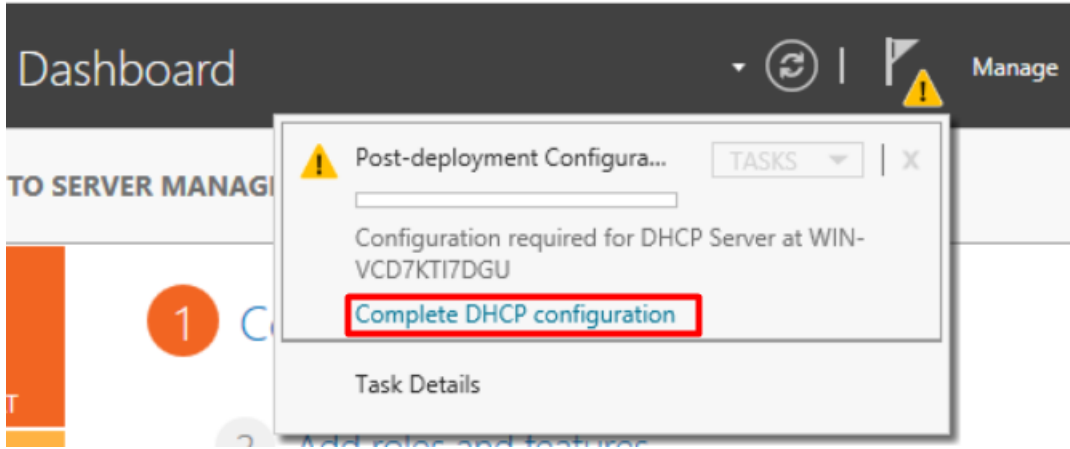
İşlem7-1b = “DHCP Server” kısmında geçilip kurulumu başlanır.



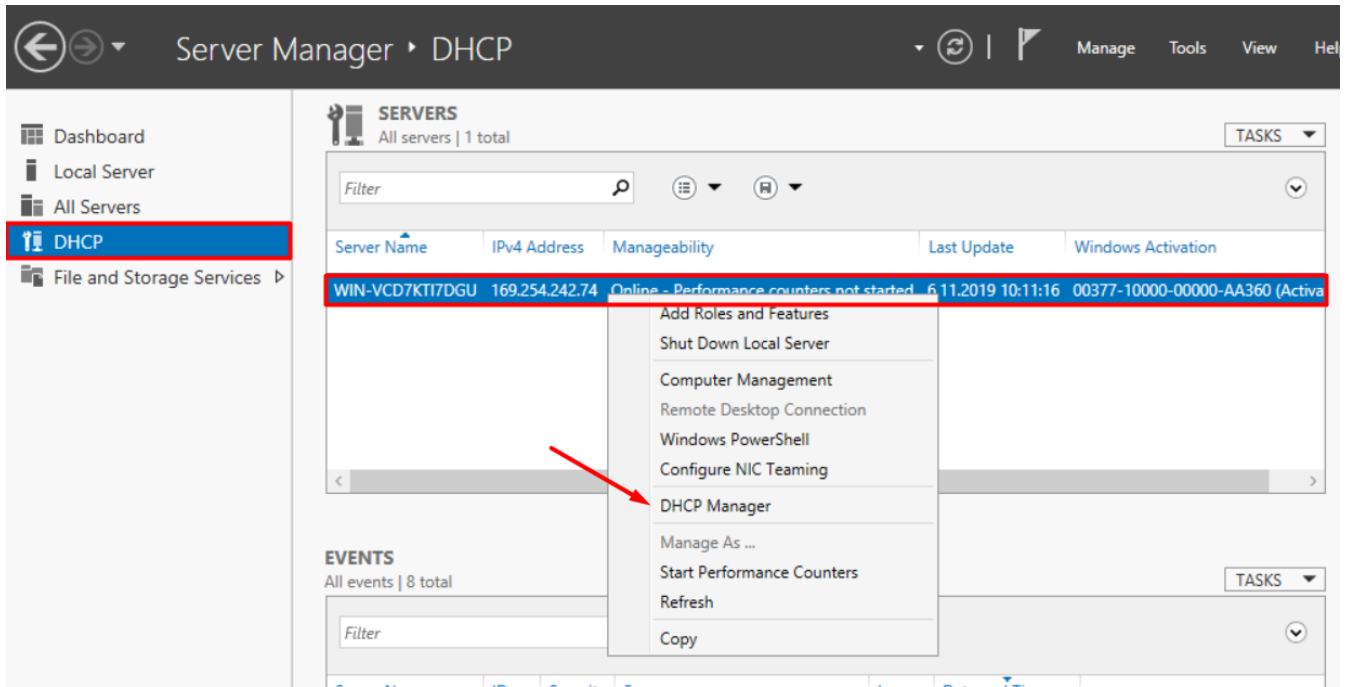
İşlem8-1b = “Restart” kısmı işaretlenerek kurulumdan sonra cihazın optimize olarak kurulumu tamamlaması için yeniden başlatılması gerekir.



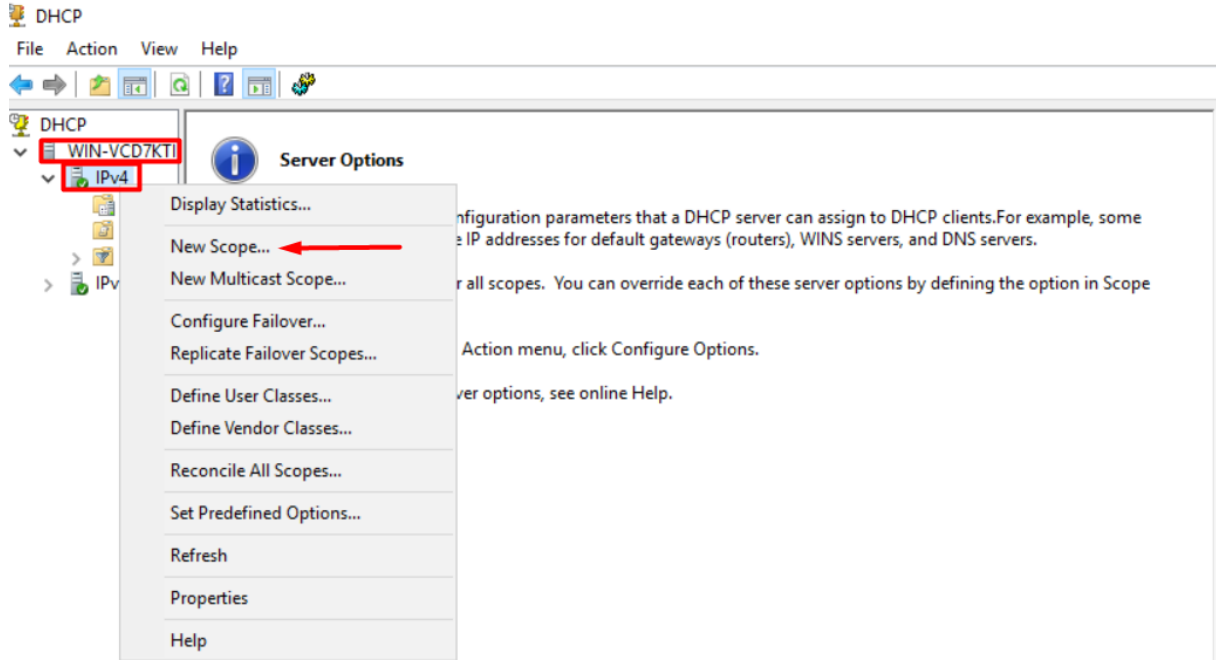
İşlem9-1b = Cihaz yeniden başlatıldıktan sonra “Server Manager” üzerinden DHCP konfigürasyonu tamamlanır (işaretlenecek bir şey yoktur direk “commit” denilerek uygulanır.



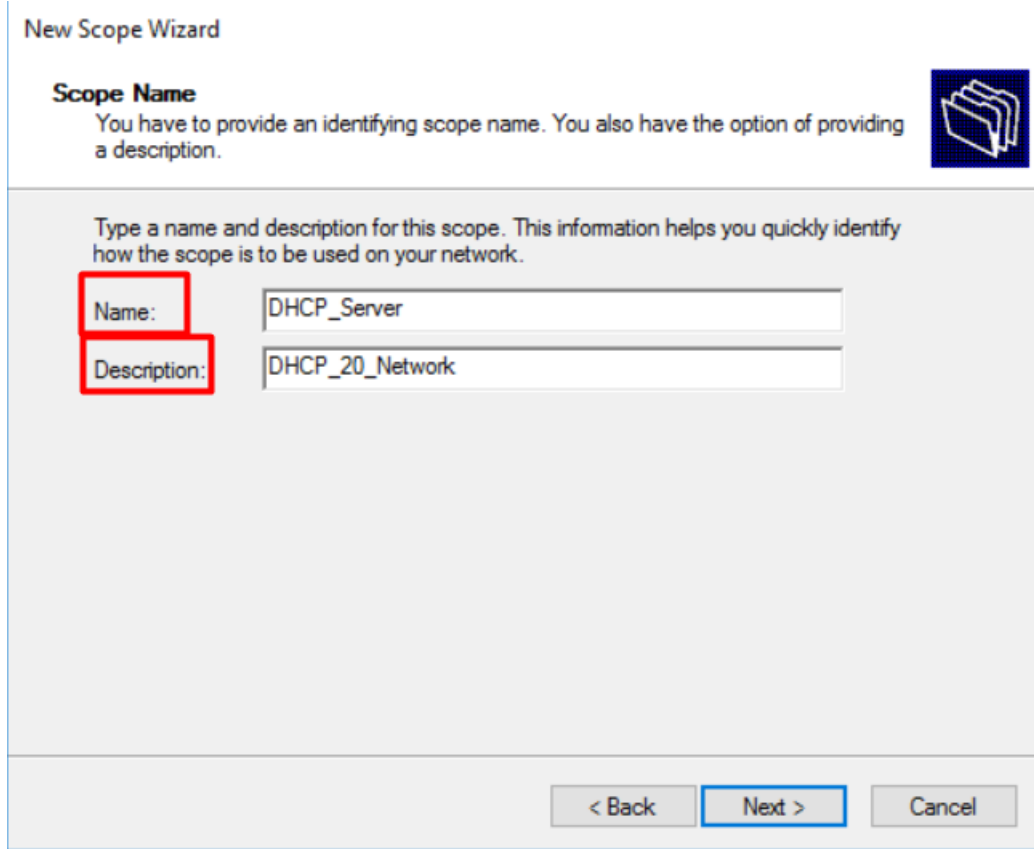
İşlem10-1b = Server Manager’ın DHCP kısmından cihazımız seçilip “DHCP Manager” açılır.



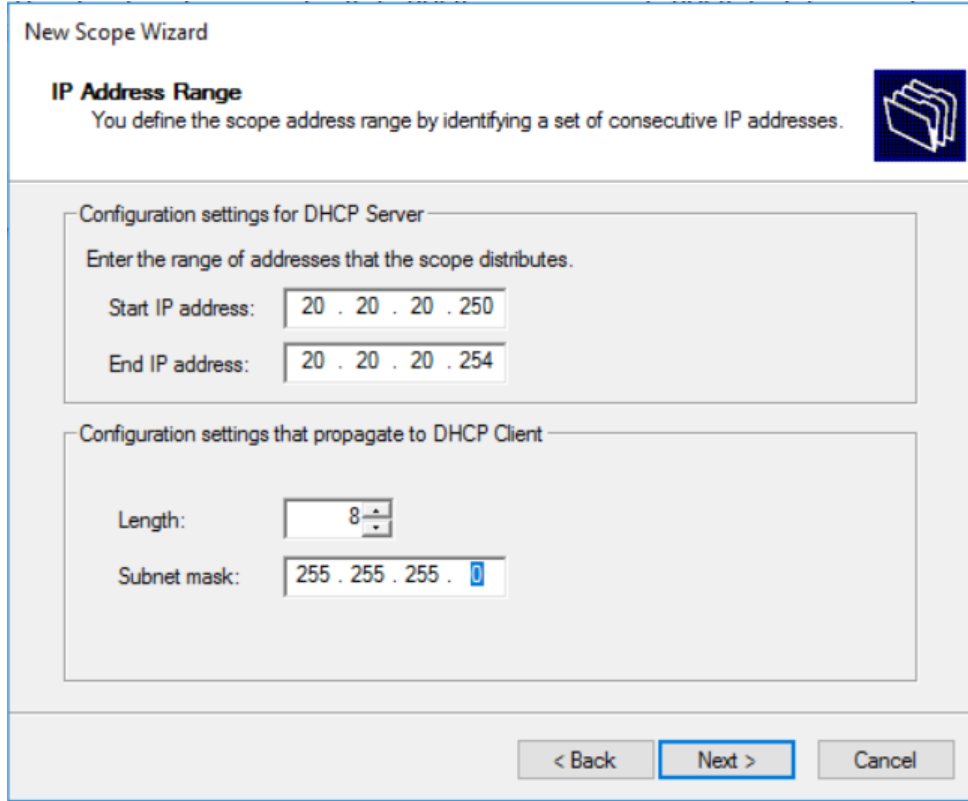
İşlem11-1b = Cihazımızın içine girip “IPv4” kısmına tıklanıp “New Scope” seçeneği seçilir.



İşlem12-1b = Server'ımızın “Name”i ve “Description” adı girilir.

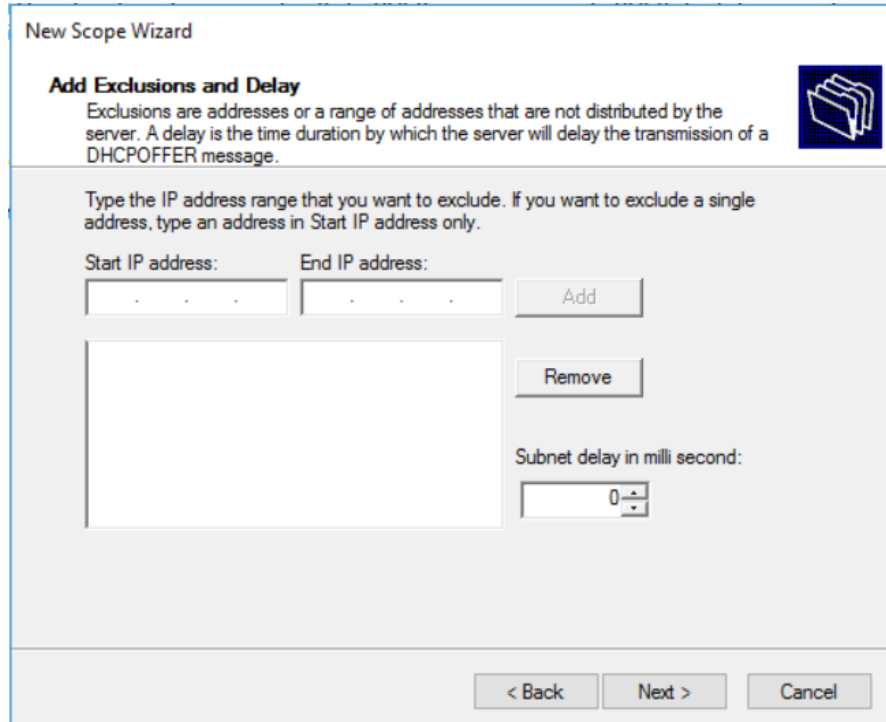


İşlem13-1b = Lokal IP'miz başlangıç ve bitiş IP değerleri girilir. (Başlangıç IP'mizi 250 almamızın sebebi topolojimize göre az IP dağıtımı içindir, duruma göre /24 yerine /29 'da kullanılabilir.



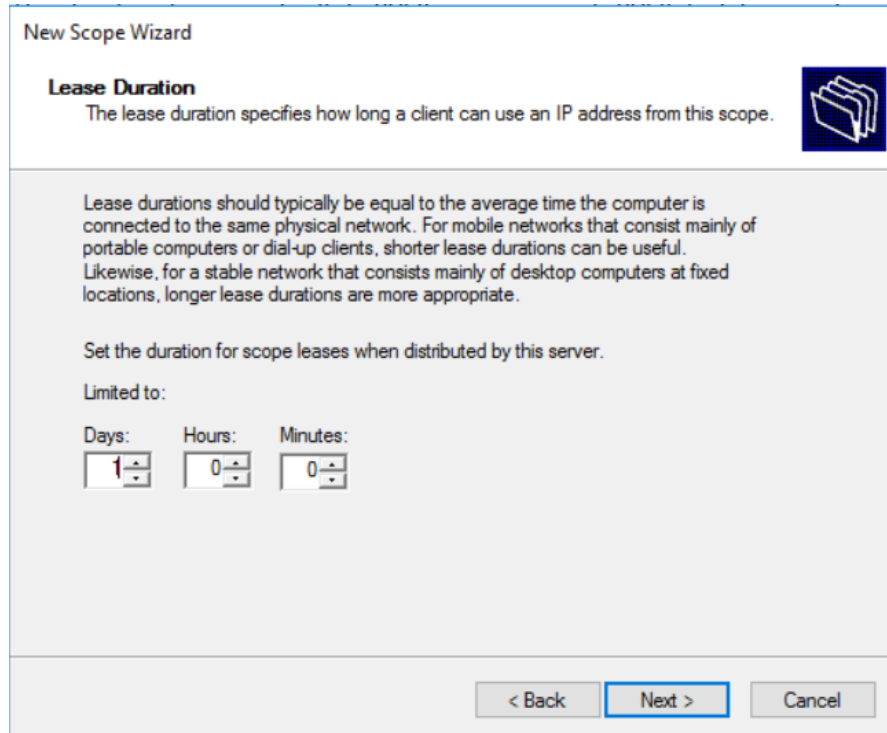
The image shows the 'New Scope Wizard' window, specifically the 'IP Address Range' step. The window has a title bar 'New Scope Wizard' and a subtitle 'IP Address Range'. Below the subtitle is a description: 'You define the scope address range by identifying a set of consecutive IP addresses.' There are two main sections: 'Configuration settings for DHCP Server' and 'Configuration settings that propagate to DHCP Client'. In the first section, 'Enter the range of addresses that the scope distributes.', there are two input fields: 'Start IP address:' with the value '20 . 20 . 20 . 250' and 'End IP address:' with the value '20 . 20 . 20 . 254'. In the second section, 'Length:' is set to '8' and 'Subnet mask:' is set to '255 . 255 . 255 . 0'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

İşlem14-1b = Start IP adresini 250'de başlattığımız için exclude etmemize gerek yok. Teorik olarak 249 adet IP bir önceki adım ile otomatik exclude edilmiş olundu.



The image shows the 'New Scope Wizard' window, specifically the 'Add Exclusions and Delay' step. The window has a title bar 'New Scope Wizard' and a subtitle 'Add Exclusions and Delay'. Below the subtitle is a description: '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.' There is a text box for '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.' Below this, there are two input fields: 'Start IP address:' and 'End IP address:'. To the right of these fields is an 'Add' button. Below the input fields is a 'Remove' button. To the right of the 'Remove' button is a 'Subnet delay in milli second:' input field with the value '0'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

İşlem15-1b = Dağıtılan IP'lerin ne kadar zamanda bir yenileceğinin zamanı girilir.



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.

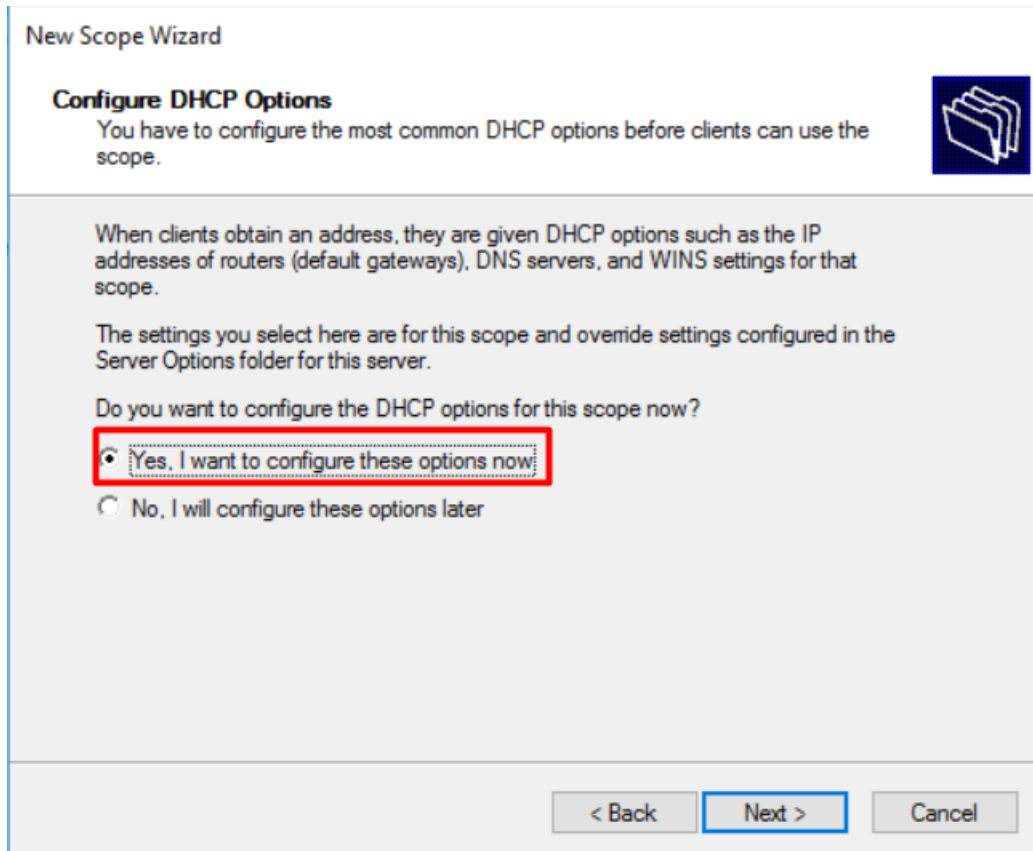
Set the duration for scope leases when distributed by this server.

Limited to:

Days: Hours: Minutes:

< Back Next > Cancel

İşlem16-1b = “Yes, i want to configure these options now” seçeneği seçilir.



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.

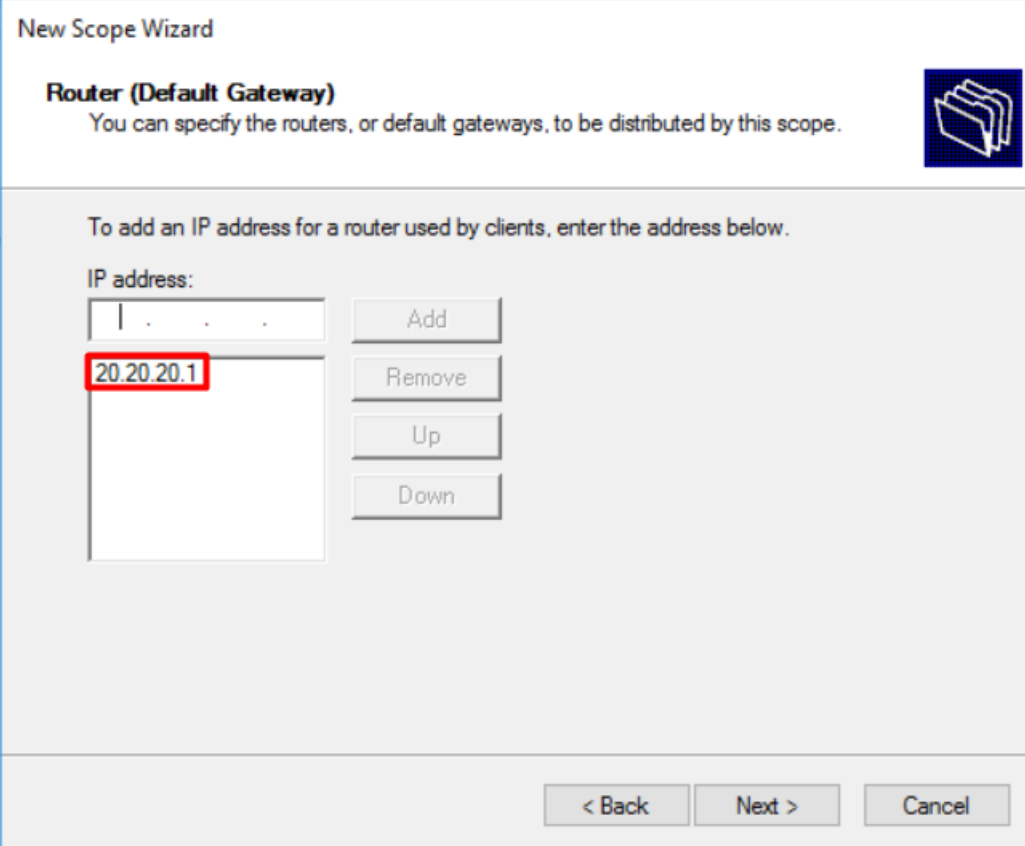
Do you want to configure the DHCP options for this scope now?

☒ Yes, I want to configure these options now

☐ No, I will configure these options later

< Back Next > Cancel

İşlem17-1b = Router'ın internete çıkacak bacağının (Default Gateway) IP'si girilir.



The image shows a 'New Scope Wizard' window with the title 'Router (Default Gateway)'. Below the title, it says 'You can specify the routers, or default gateways, to be distributed by this scope.' To the right of this text is a folder icon. Below this, there is a section titled 'To add an IP address for a router used by clients, enter the address below.' This section contains an 'IP address:' label, a text input field with a dropdown arrow, and a list box. The text input field contains '20.20.20.1', which is highlighted with a red rectangle. To the right of the input field and list box are four buttons: 'Add', 'Remove', 'Up', and 'Down'. At the bottom of the window are three buttons: '< Back', 'Next >', and 'Cancel'.

İşlem17-1b (in Router) = Router'ın local networkümüze bağlı bacağına IP adresi verilir.

```
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int
Router(config)#interface fa
Router(config)#interface fastEthernet 0/1
Router(config-if)#ip ad
Router(config-if)#ip address 20.20.20.1 255.255.255.0
Router(config-if)#no sh
Router(config-if)#
*Jan  1 00:20:32.535: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state t
o up
*Jan  1 00:20:33.535: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to up
```

İşlem18-1b = DNS Server IP veya IP'leri girilir.

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:

İşlem19-1b = “WINS Servers” kısmı geçilir.

New Scope Wizard

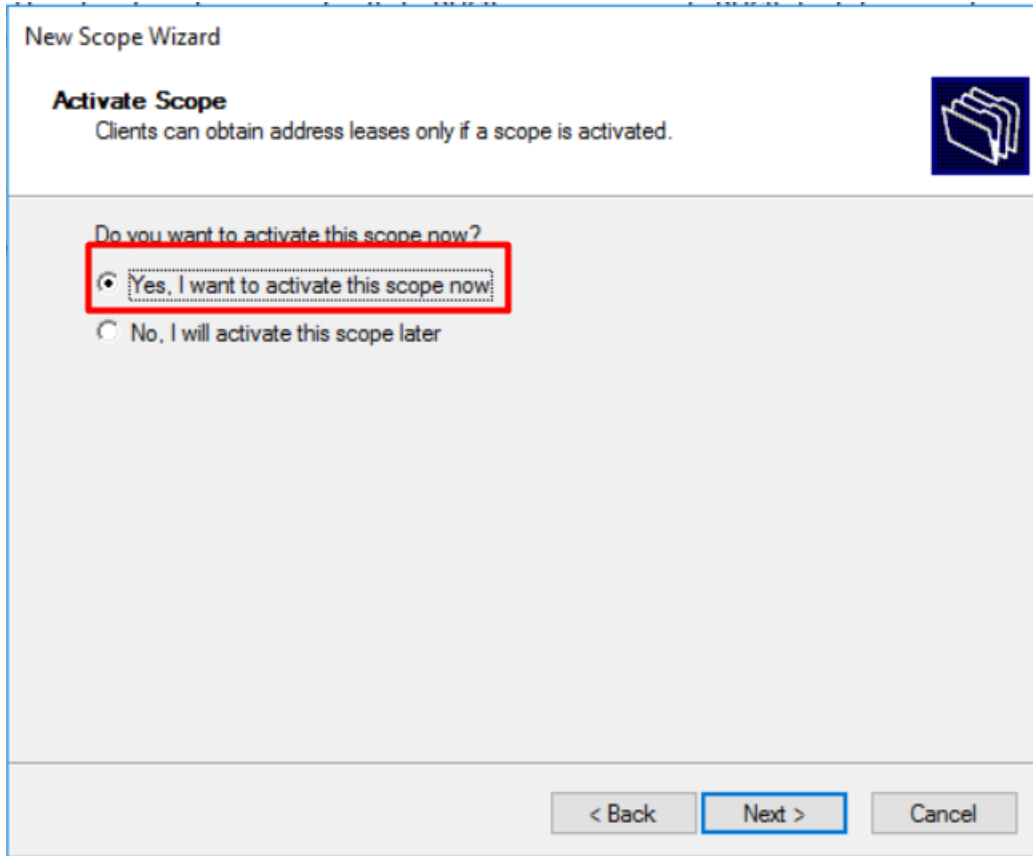
WINS Servers
Computers running Windows can use WINS servers to convert NetBIOS computer names to IP addresses.

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:

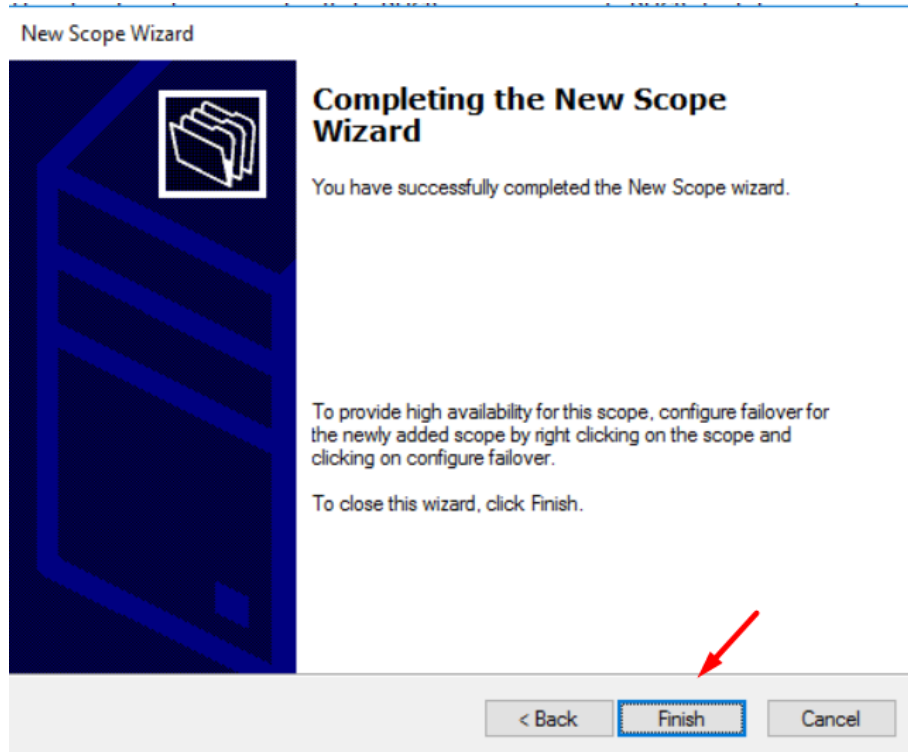
To change this behavior for Windows DHCP clients modify option 046, WINS/NBT Node Type, in Scope Options.

İşlem20-1b = “Yes, i want to activate this scope now” seçilir.



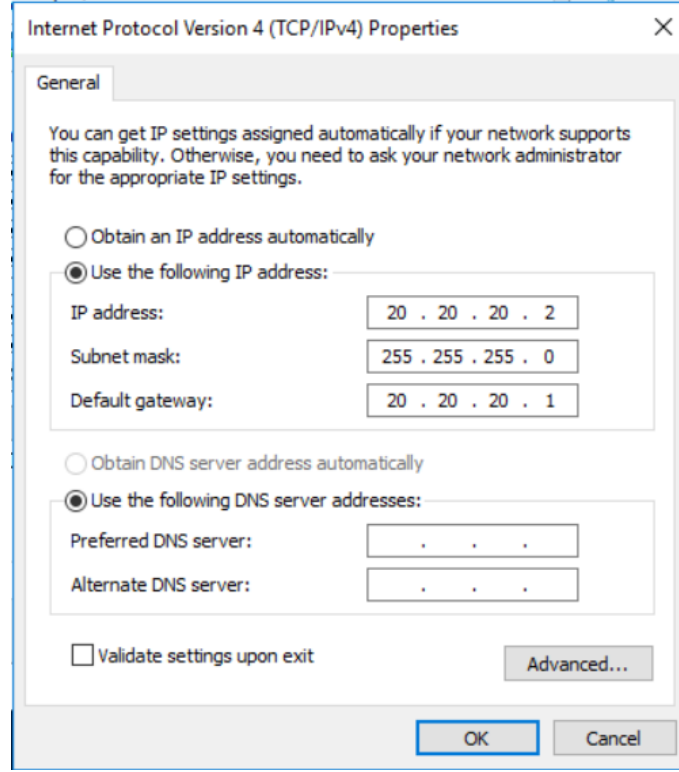
The image shows the 'New Scope Wizard' window, specifically the 'Activate Scope' step. The title bar reads 'New Scope Wizard'. Below the title, the section is 'Activate Scope' with a subtext: 'Clients can obtain address leases only if a scope is activated.' There is a folder icon in the top right corner. The main area contains the question 'Do you want to activate this scope now?' followed by two radio button options. The first option, 'Yes, I want to activate this scope now', is selected and highlighted with a red rectangular box. The second option is 'No, I will activate this scope later'. At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a blue border.

İşlem21-1b = Finish denilip Server Kurulumu tamamlanır.



The image shows the 'New Scope Wizard' window at the 'Completing the New Scope Wizard' step. The title bar reads 'New Scope Wizard'. On the left, there is a large blue graphic with a folder icon. The main area has the title 'Completing the New Scope Wizard' and the text 'You have successfully completed the New Scope wizard.' Below this, it says: '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.' and 'To close this wizard, click Finish.' At the bottom right, there are three buttons: '< Back', 'Finish', and 'Cancel'. A red arrow points to the 'Finish' button, which is highlighted with a blue border.

İşlem22-1b = Cihaz(lar)ın DHCP Server üzerinden IP alması için DHCP Server'ı kurduğumuz sanal cihazımıza "Static IP" atanır. Static IP exclude edilmiş olmalıdır!

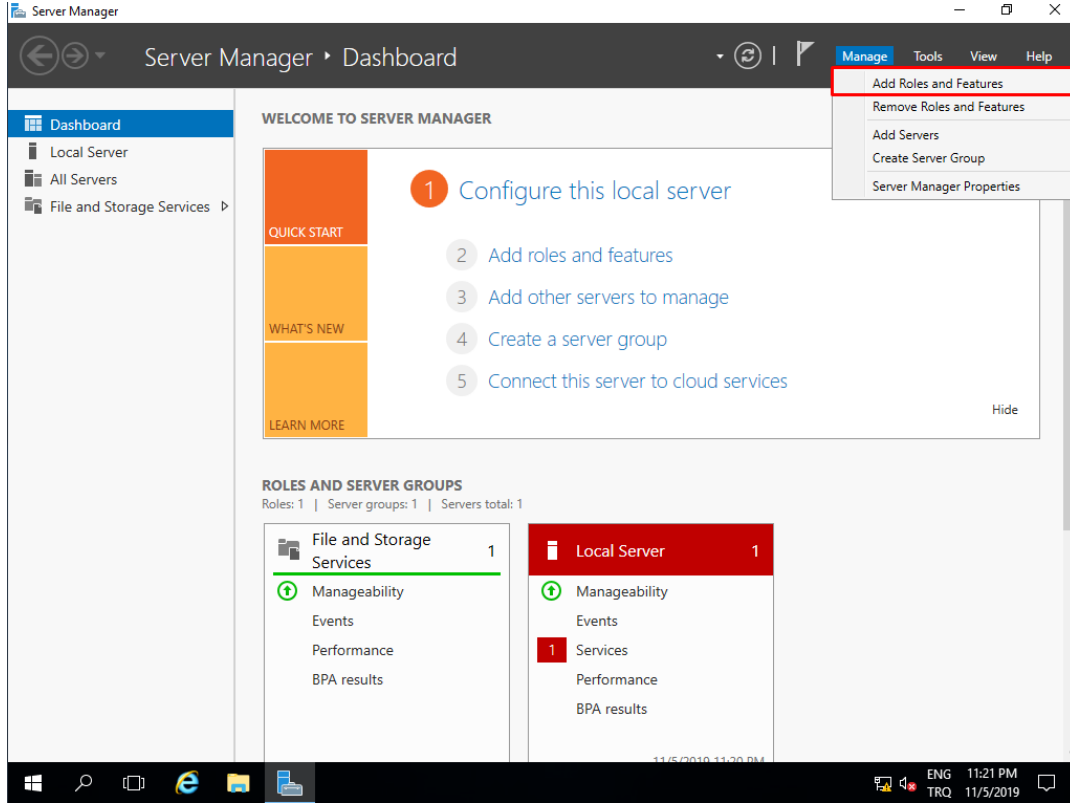


Ve cihazımız DHCP üzerinden otomatik IP almış oldu (.250 IP sanal cihazı kurulu olduğu ana cihaz IP'si, 251 IP'si ise Windows 10 cihazımıza atanan IP). "Address Leases" kısmı boş ise IPv4'e tıklanıp "Deactivate" tıklanır ve yeniden IPv4'e tıklanıp "Active" edilir. Tekrardan Address Leases'a gelindiğinde IP'ler atanmış olur.

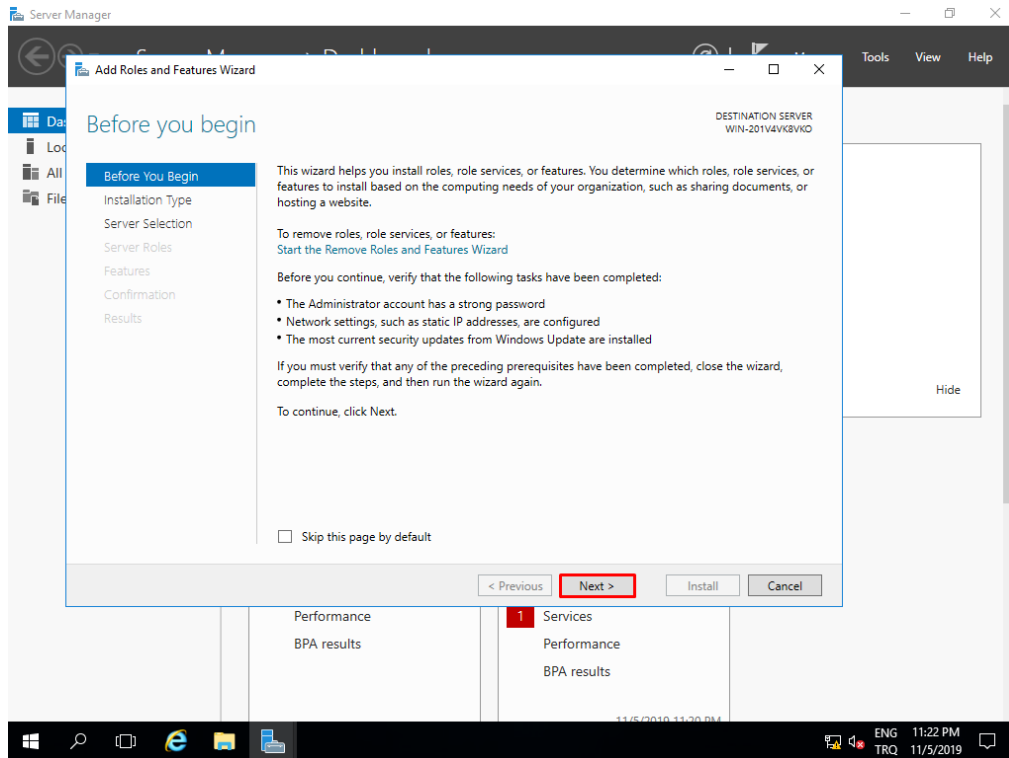
DHCP	Client IP Address	Name	Lease Expiration	Type	Unique ID	De
WIN-VCD7KT17DGU	20.20.20.250	OZAN	7.11.2019 10:44:35	DHCP	7427ea3a2...	
IPv4	20.20.20.251	DESKTOP-FSF5PF0	7.11.2019 10:49:16	DHCP	00155d34d...	
Scope [20.20.20.0] DHCP						
Address Pool						
Address Leases						

3c-) IIS Server Kurulumu

İşlem1-1c = IIS Server'ı için "Server Manager"dan "Add Roles and Features" tıklanır.



İşlem2-1c = "Next" ile ilerlenir.



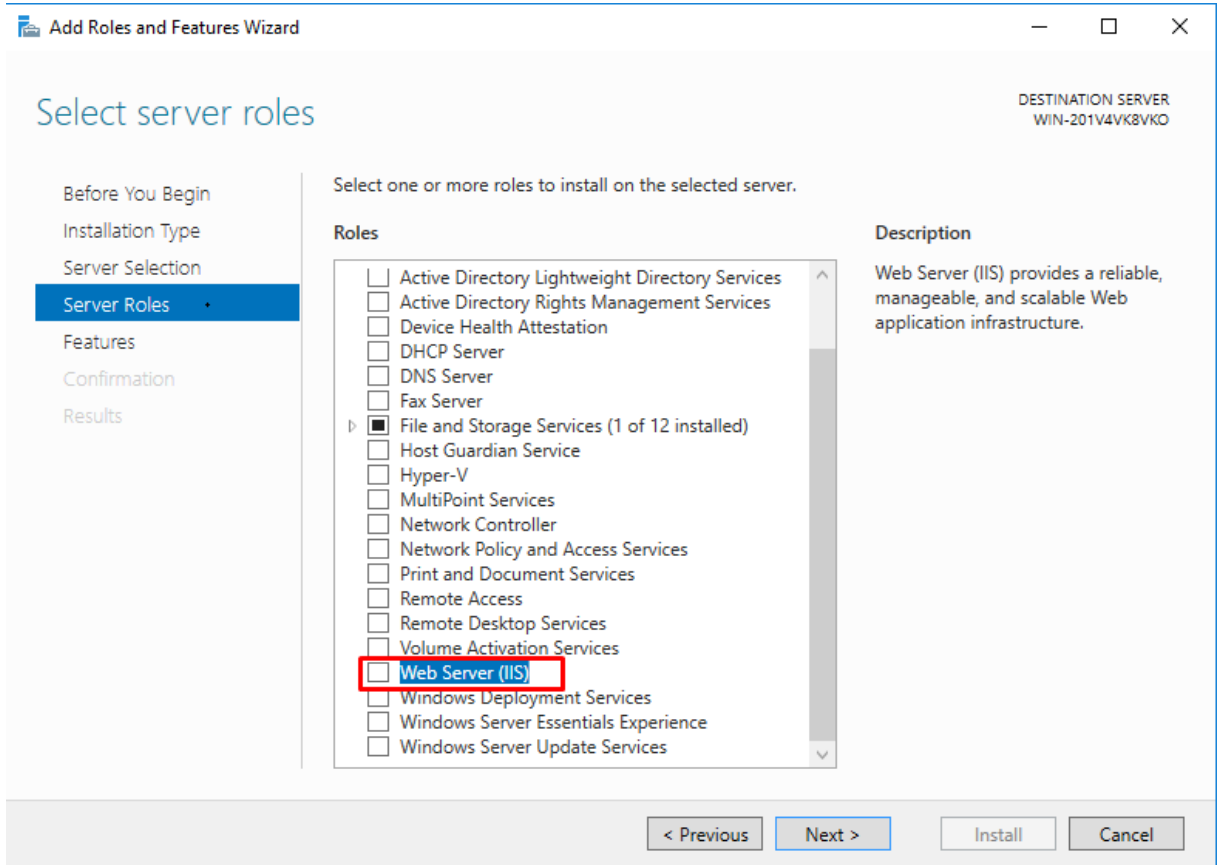
İşlem3-1c = "Role-based installation" seçilir.

The screenshot shows the 'Add Roles and Features Wizard' window. The title bar says 'Add Roles and Features Wizard'. The main heading is 'Select installation type'. On the right, it says 'DESTINATION SERVER WIN-201V4VK8VKO'. On the left, there is a navigation pane with the following items: 'Before You Begin', 'Installation Type' (highlighted), 'Server Selection', 'Server Roles', 'Features', 'Confirmation', and 'Results'. The main 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)'. There are two radio button options: 'Role-based or feature-based installation' (selected) and 'Remote Desktop Services installation'. The 'Role-based or feature-based installation' option has a description: 'Configure a single server by adding roles, role services, and features.' The 'Remote Desktop Services installation' option has a 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 >' (highlighted with a red box), 'Install', and 'Cancel'.

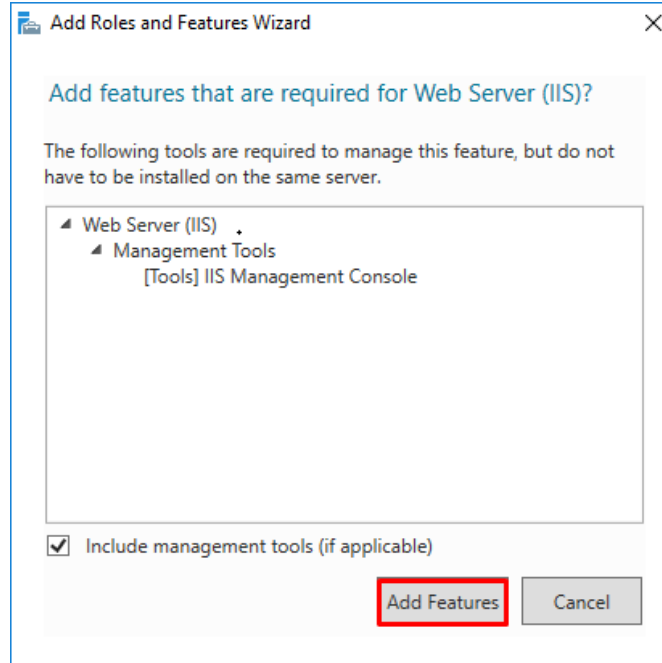
İşlem4-1c = Sanal cihazımız ve cihazın disk'i seçilir.

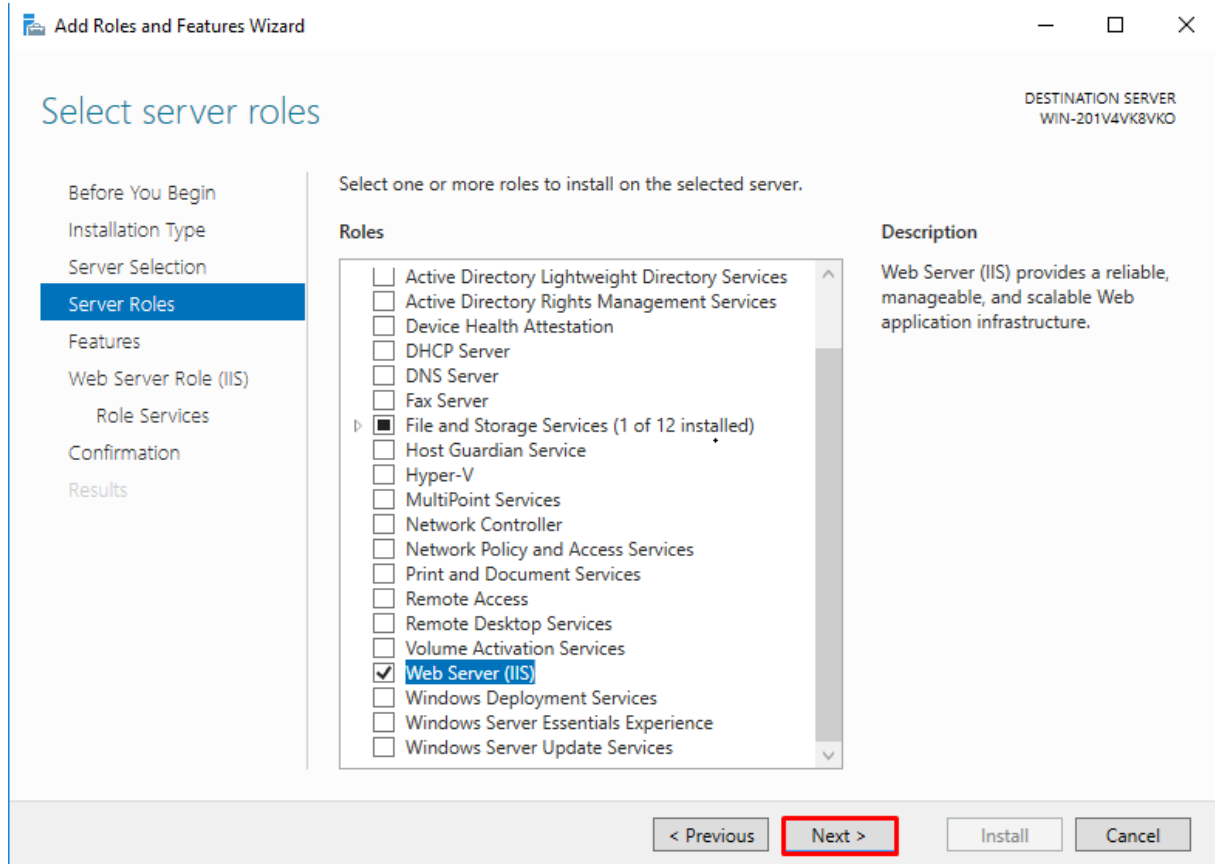
The screenshot shows the 'Add Roles and Features Wizard' window. The title bar says 'Add Roles and Features Wizard'. The main heading is 'Select destination server'. On the right, it says 'DESTINATION SERVER WIN-201V4VK8VKO'. On the left, there is a navigation pane with the following items: 'Before You Begin', 'Installation Type', 'Server Selection' (highlighted), 'Server Roles', 'Features', 'Confirmation', and 'Results'. The main area contains the following text: 'Select a server or a virtual hard disk on which to install roles and features.' There are two radio button options: 'Select a server from the server pool' (selected) and 'Select a virtual hard disk'. Below the radio buttons, there is a section titled 'Server Pool'. It contains a 'Filter:' text box. Below the filter, there is a table with the following columns: 'Name', 'IP Address', and 'Operating System'. The table has one row: 'WIN-201V4VK8VKO', '192.168.52.136', and 'Microsoft Windows Server 2016 Datacenter Evaluation'. Below the table, it says '1 Computer(s) found'. At the bottom, there is a text box with the following text: '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.' At the bottom, there are four buttons: '< Previous', 'Next >' (highlighted with a red box), 'Install', and 'Cancel'.

İşlem5-1c = “Server Roles” kısmından “Web Server (IIS)” seçilir.

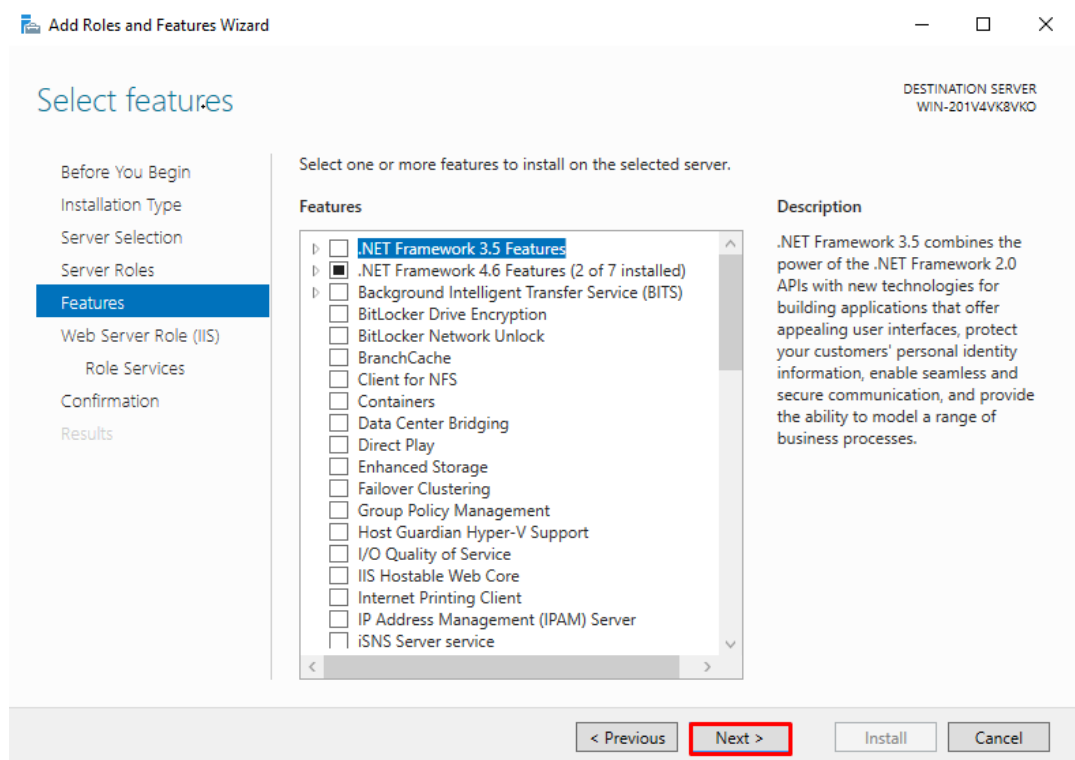


İşlem6-1c = “Add Features” denip eklenmiş olunur.

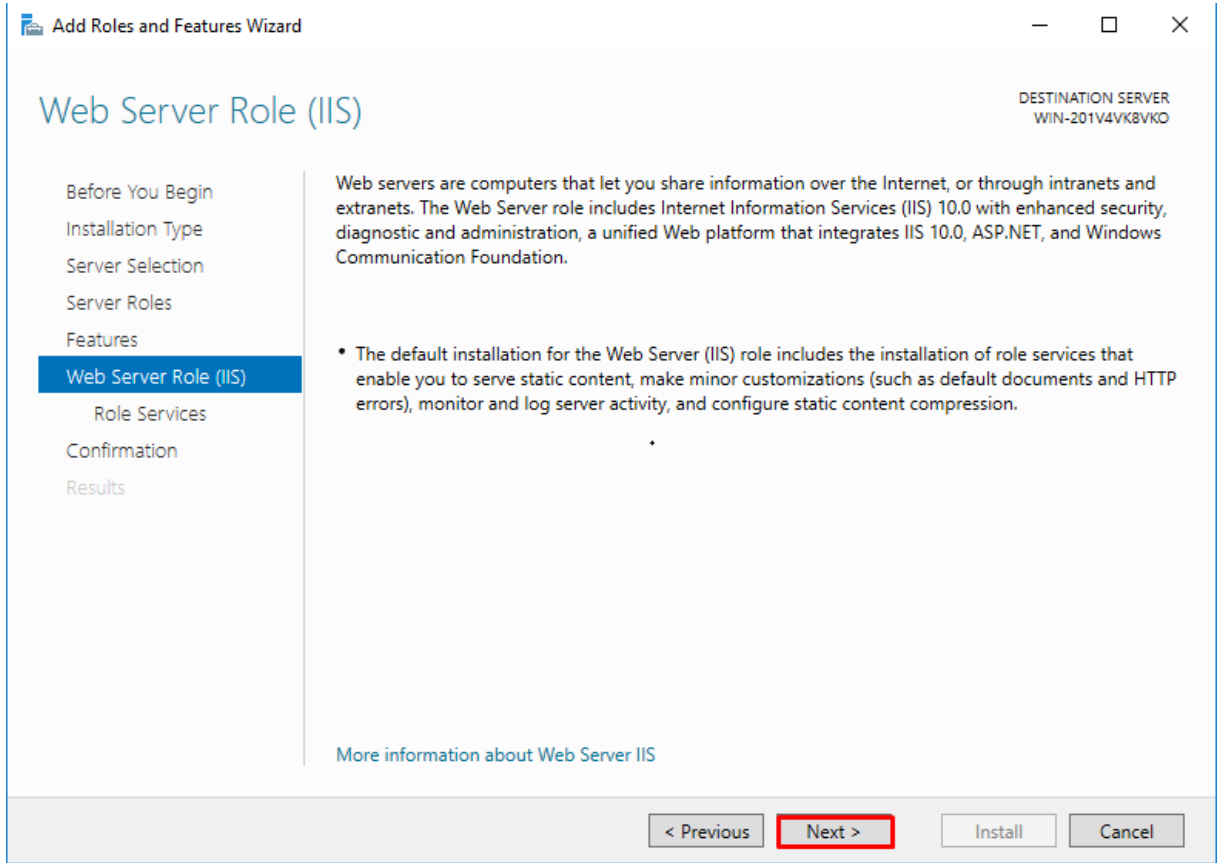




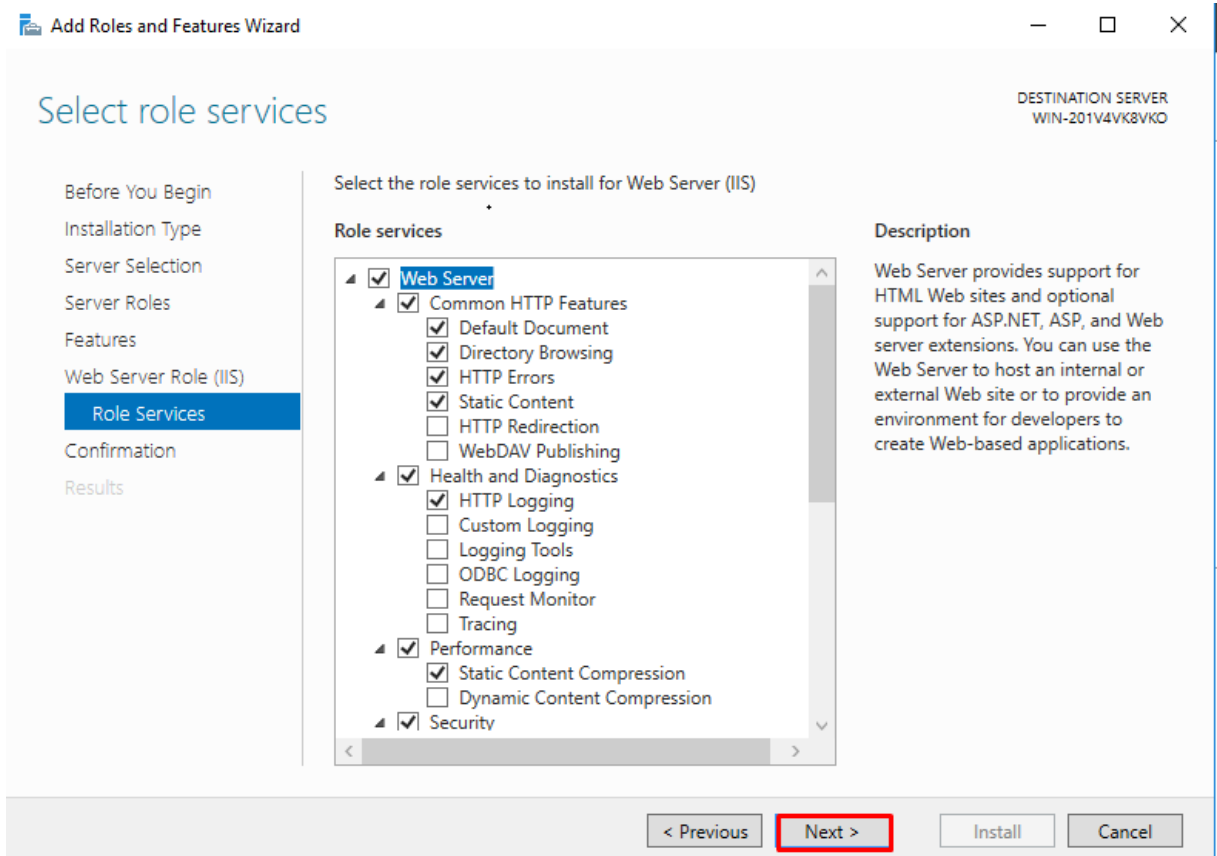
İşlem7-1c = "Features" kısmında seçim yapılmadan ilerlenir.



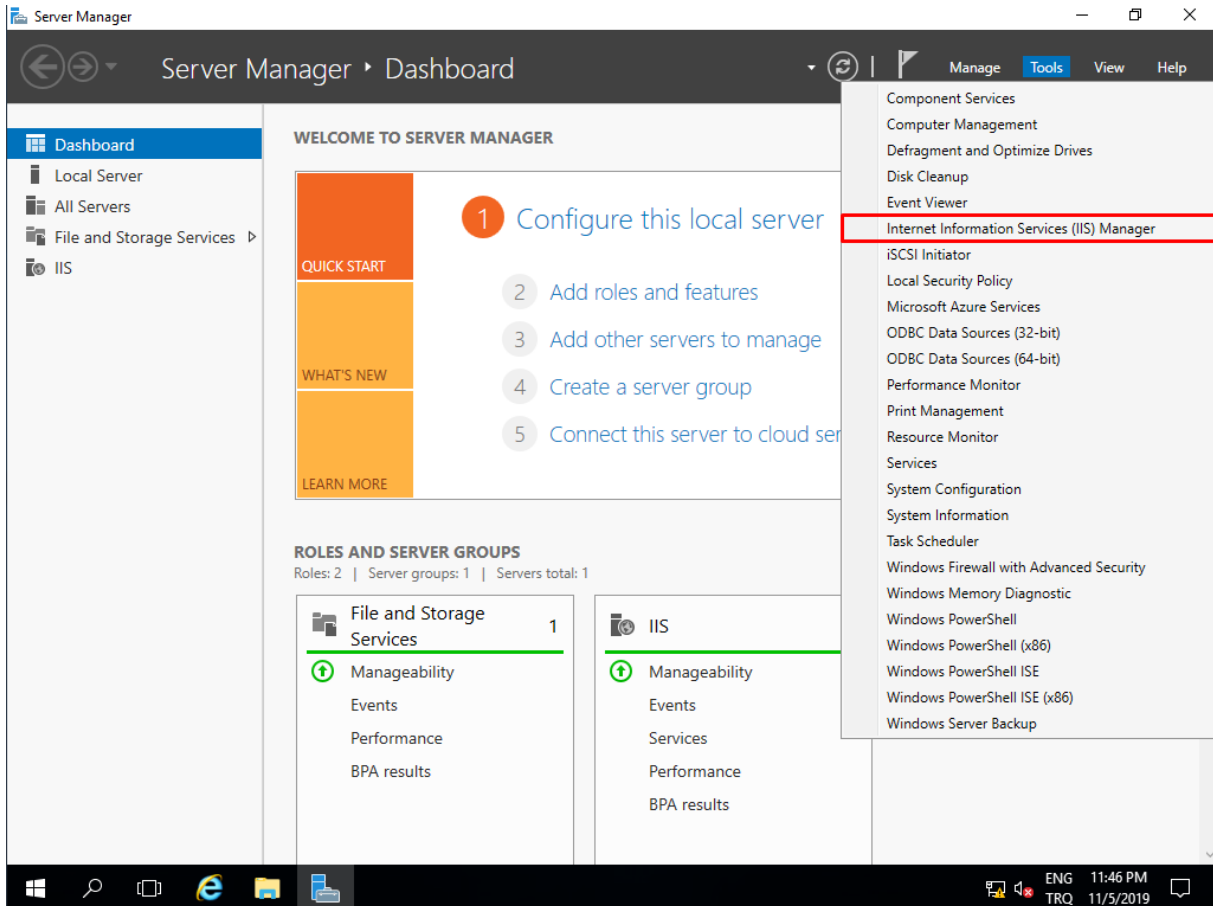
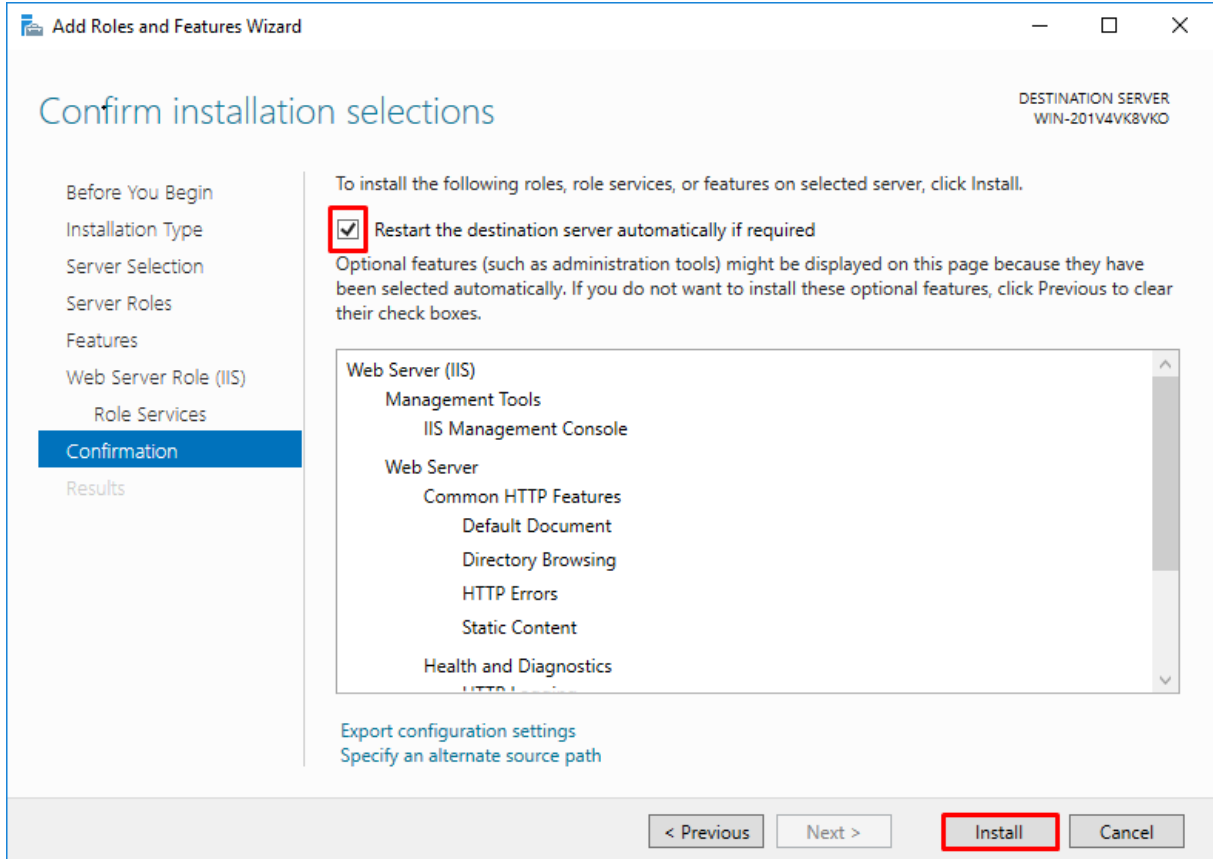
İşlem8-1c = “Next” denir ilerlenir.



İşlem9-1c = “Role Services” default olarak bırakılıp ilerlenir.



İşlem10-1c = “Restart” kısmı işaretlenerek kurulumdan sonra cihazın optimize olarak kurulumu tamamlaması için yeniden başlatılması gerekir.



İşlem11-1c = İnternet üzerinden olan cihazımıza “CMD” üzerinden >ipconfig /release , >ipconfig /renew yapılarak kendi IP’si (DHCP’den gelen yeni IP’si) alınır ve bu IP statik IP olarak atanır ve WEB server’ımız hazır hala gelmiş olunur.

```
Administrator: Command Prompt
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . :

C:\Users\Administrator>ipconfig /release

Windows IP Configuration

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::e00e:c968:772:ee36%11
    Default Gateway . . . . . :

C:\Users\Administrator>ipconfig /renew

Windows IP Configuration

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::e00e:c968:772:ee36%11
    IPv4 Address. . . . . : 192.168.53.65
    Subnet Mask . . . . . : 255.255.254.0
    Default Gateway . . . . . : 192.168.52.1

Tunnel adapter isatap.{DCF89438-D992-44D7-8AAD-E26E26037634}:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

C:\Users\Administrator>
```

Internet Protocol Version 4 (TCP/IPv4) Properties

General

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

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address:	192 . 168 . 53 . 65
Subnet mask:	255 . 255 . 254 . 0
Default gateway:	192 . 168 . 52 . 1

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server:	8 . 8 . 8 . 8
Alternate DNS server:	. . .

☐ Validate settings upon exit

Advanced...

OK Cancel

1d-) Routing Protokol

İşlem1-1d = Router'ın internete bağlı bacağına IP ataması. İnternete bağlanacak porttan IP ataması rastgele değer veremeyiz, bu IP'lerde internet servis sağlayıcısı tarafından bir DHCP havuzu oluşturularak dağıtılmaktadır, kullanılan bir IP ile çakışmamak için boşta olan IP'lerden atama yapılır. Bunun için "Router" üzerinde "Config" modunda interface'in içine girilir ver "ip address dhcp" komutu yazılır. Bu boş IP exclude edilmiş olmalıdır.

```
Router(config)#int
Router(config)#interface fa
Router(config)#interface fastEthernet 0/0
Router(config-if)#ip ad
Router(config-if)#ip address dh
Router(config-if)#ip address dhcp
Router(config-if)#
```

Router'ın FastEthernet 0/0 portuna hangi IP'nin atandığını öğrenmek için ise "show ip interface brief" komutu girilir.

```
Router#show ip interface brief
Interface                IP-Address      OK? Method Status        Protocol
FastEthernet0/0          192.168.52.159  YES DHCP    up            up
FastEthernet0/1          20.20.20.1      YES manual  up            up
Serial0/0/0              unassigned      YES NVRAM   administrativ down down
Serial0/0/1              unassigned      YES NVRAM   administrativ down down
Serial0/1/0              unassigned      YES NVRAM   administrativ down down
Serial0/1/1              unassigned      YES NVRAM   administrativ down down
Router#
```

İşlem2-1d = Local IP'lerimizi internete çıkarmak Router üzerinde NAT / PAT yapılmalıdır. Bunun için ilk olarak "access-list" yapıp sonra "nat/pat konfigür"e edilir. Konfig komutları:

>access-list <Standart no> permit <kaynak IP adresi> <kaynap wild card>

>ip nat inside source list <access list numarası> interface <router'ın portu> overload

Bu komutlar ile PAT yapılmış olup local networkümüz üzerinden tüm cihazlar tek bir IP üzerinden internete çıkacaklardır.

Bir işlem daha vardır;

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ac
Router(config)#access-list 1 per
Router(config)#access-list 1 permit 20.20.20.0 0.0.0.255
Router(config)#ip nat
Router(config)#ip nat in
Router(config)#ip nat inside s
Router(config)#ip nat inside source 1
Router(config)#ip nat inside source list 1 in
Router(config)#ip nat inside source list 1 interface f
Router(config)#ip nat inside source list 1 interface fastEthernet 0/0 ov
Router(config)#ip nat inside source list 1 interface fastEthernet 0/0 overload
Router(config)#
```

NAT / PAT yaparken hangi network'ün iç, hangisinin dış olduğunda konfigüre edilmesi gerekir. İnternete çıkılacak port dış, local network'ümüze bağlı port ise içtir

```
Router(config)#
Router(config)#int
Router(config)#interface fa
Router(config)#interface fastEthernet 0/1
Router(config-if)#ip nad
Router(config-if)#ip nat in
Router(config-if)#ip nat inside
Router(config-if)#ex
Router(config)#int
Router(config)#interface fa
Router(config)#interface fastEthernet 0/0
Router(config-if)#ip na
Router(config-if)#ip nat o
Router(config-if)#ip nat outside
Router(config-if)#
```

Ve artık internete bağlıyız.

İşlem3-1d= İnternete bağlandığımızı router üzerinden de “show ip nat translations” ile bakabiliriz.

```
Router#show ip nat translations
Pro Inside global      Inside local      Outside local      Outside global
icmp 192.168.52.159:0    20.20.20.250:0    8.8.8.8:0          8.8.8.8:0
udp 192.168.52.159:123   20.20.20.250:123   40.81.188.85:123   40.81.188.85:123
udp 192.168.52.159:123   20.20.20.250:123   51.145.123.29:123  51.145.123.29:123
tcp 192.168.52.159:49782  20.20.20.250:49782  108.177.127.188:443 108.177.127.188:443
tcp 192.168.52.159:49784  20.20.20.250:49784  52.142.84.61:443    52.142.84.61:443
tcp 192.168.52.159:49785  20.20.20.250:49785  40.67.251.132:443    40.67.251.132:443
tcp 192.168.52.159:49904  20.20.20.250:49904  192.168.53.65:80     192.168.53.65:80
tcp 192.168.52.159:49905  20.20.20.250:49905  192.168.53.65:80     192.168.53.65:80
udp 192.168.52.159:50237  20.20.20.250:50237  8.8.8.8:53           8.8.8.8:53
udp 192.168.52.159:52538  20.20.20.250:52538  172.217.169.100:443  172.217.169.100:443
udp 192.168.52.159:59732  20.20.20.250:59732  172.217.169.131:443  172.217.169.131:443
udp 192.168.52.159:61227  20.20.20.250:61227  40.81.120.44:3544    40.81.120.44:3544
udp 192.168.52.159:61227  20.20.20.250:61227  40.81.120.45:3544    40.81.120.45:3544
udp 192.168.52.159:61227  20.20.20.250:61227  40.81.120.45:65444   40.81.120.45:65444
udp 192.168.52.159:63970  20.20.20.250:63970  8.8.8.8:53           8.8.8.8:53
tcp 192.168.52.159:1108   20.20.20.251:49796  52.142.84.61:443    52.142.84.61:443
tcp 192.168.52.159:49800  20.20.20.251:49800  52.142.84.61:443    52.142.84.61:443
tcp 192.168.52.159:49988  20.20.20.251:49988  13.107.4.50:80       13.107.4.50:80
```


İşlem4-1d = Son olarak Local network'ümüz içinde olan windows 10 cihazımızdan internet üzerinde olan cihazımıza IP adresi ile giriş yaparız (DNS yapmadığımız için IP ile giriş yaparız.

