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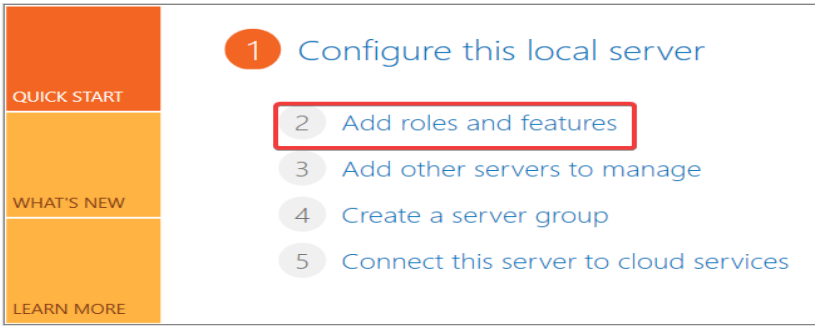
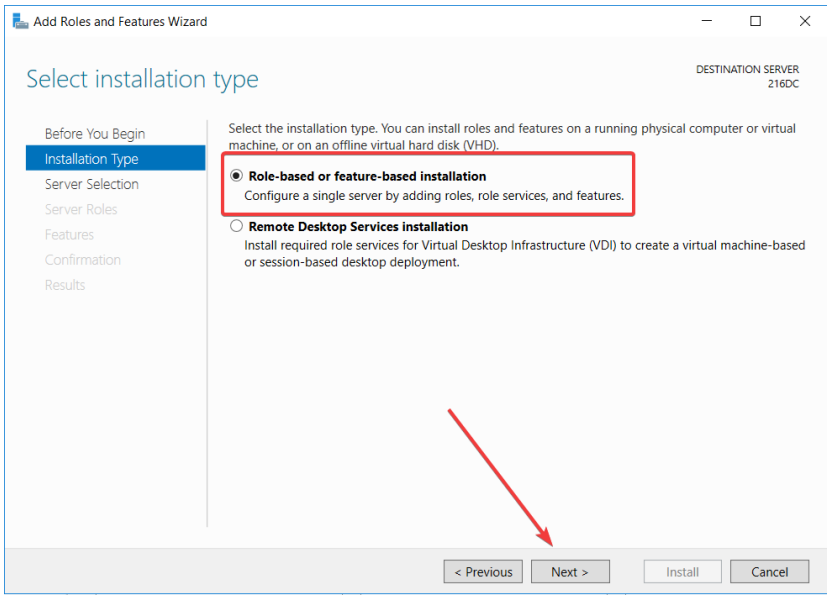
1. Installing the DHCP Role

1.1 Using Server Manager to install a DHCP Role

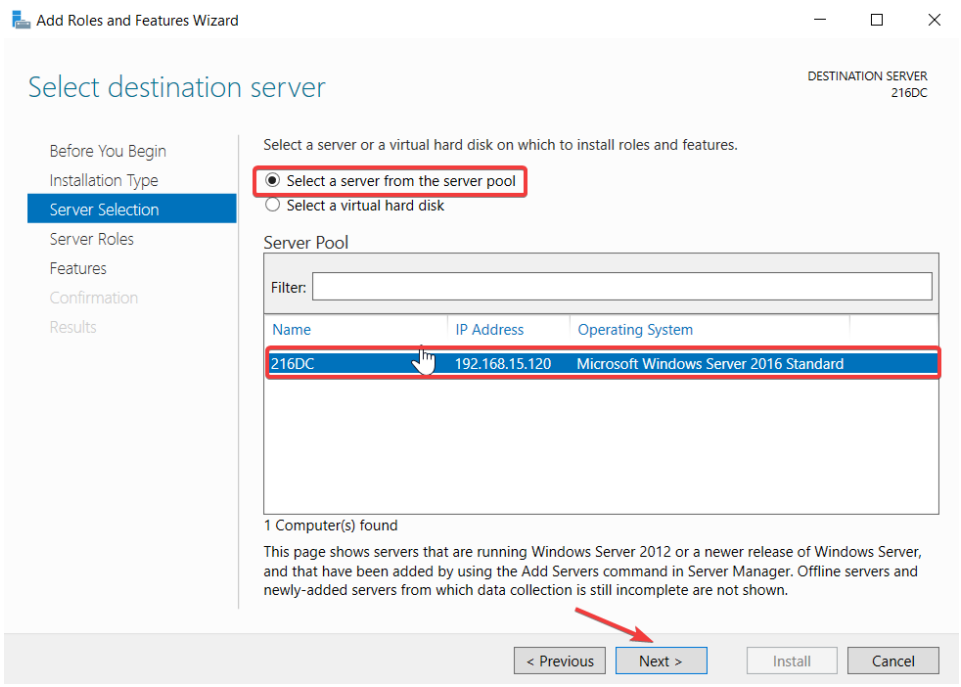
1. We will be using Server Manager to install the DHCP Role. *Server Manager is a tool used to install, configure, and manage server roles and features in Windows Server 2016*. Open up the Server Manager Dashboard and click on **Add roles and features**.



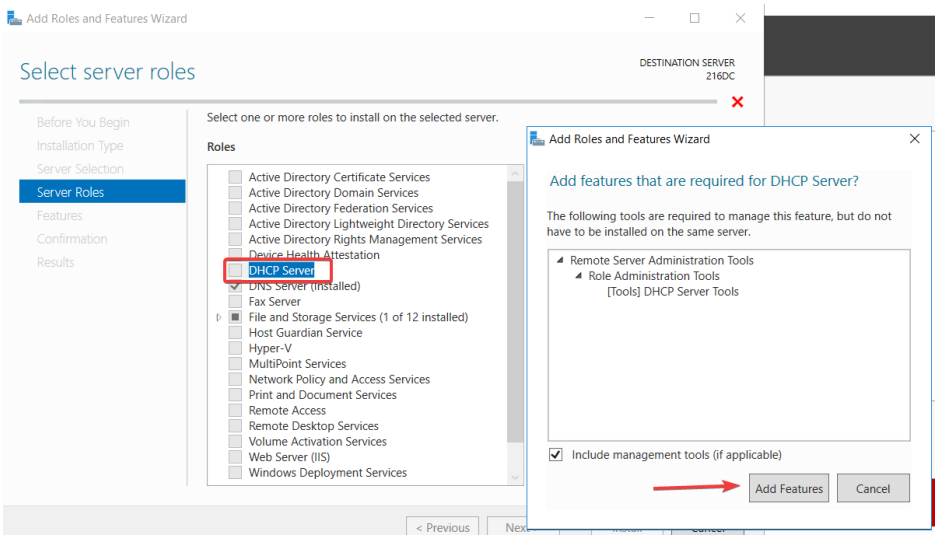
2. Click **Next** on the Before you begin page, and make sure **Role-based or feature-based installation** is selected and click **Next**.



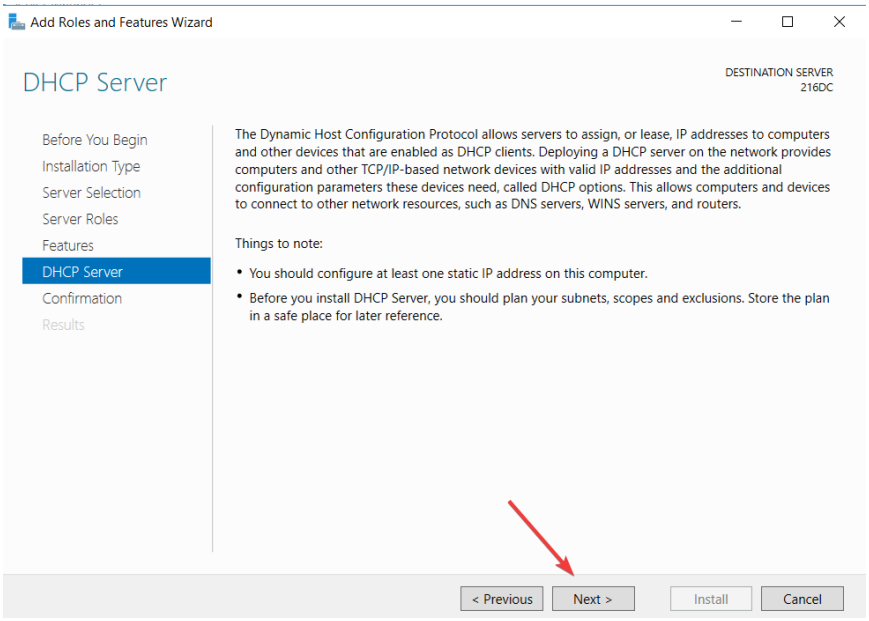
3. On the Select destination server page, make sure that **Select Server from the server pool** is selected and that the 216DC server highlighted and click **Next**.



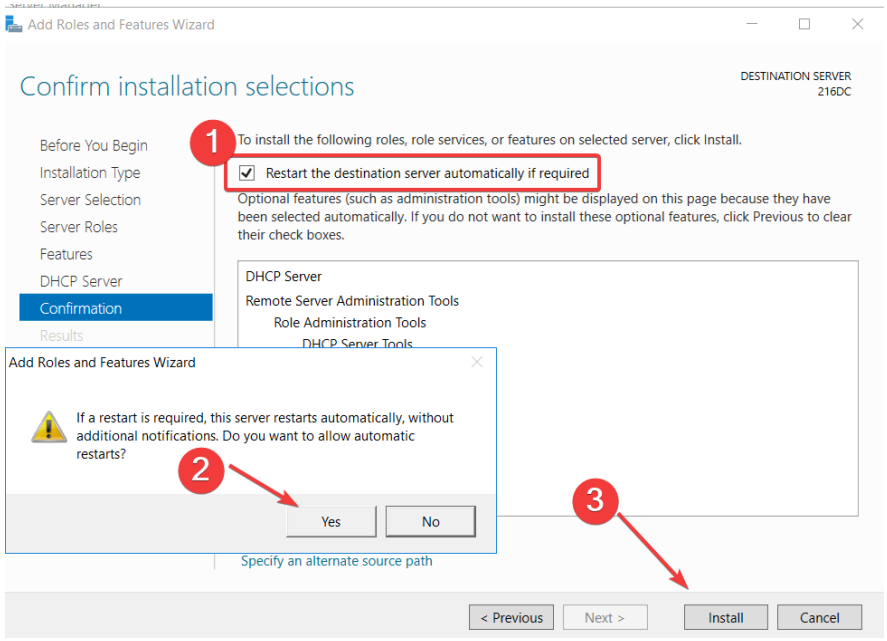
4. On the Select server roles page we will be putting a check in the **DHCP Server** role**.** *A server role is program that performs a specific function as a network service for multiple users on the network*. When the Add features that are required for DHCP Server box pops up click **Add Features** and then **Next**.



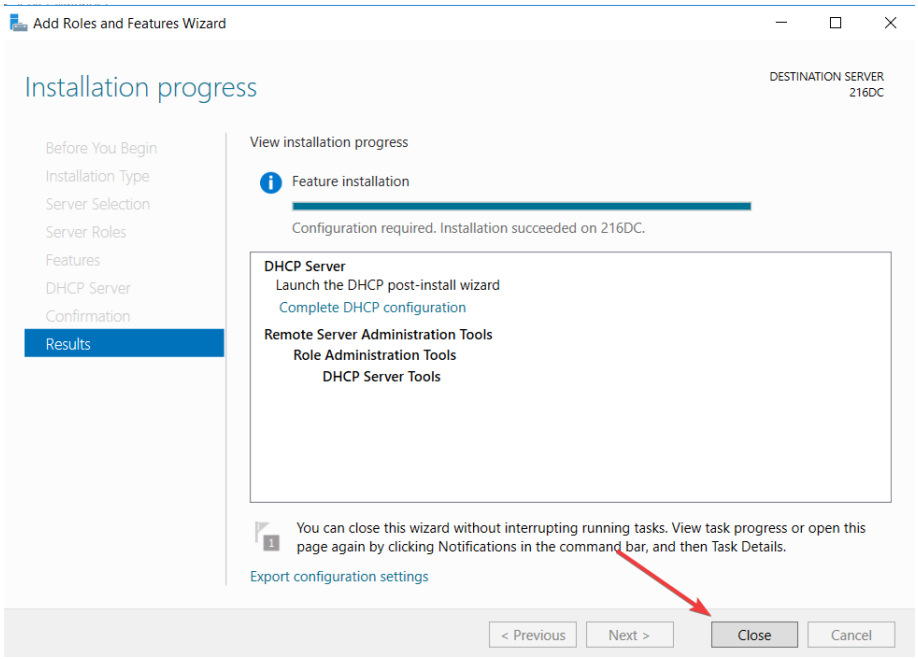
5. On the Select features page leave the default settings and click **Next**. Here we are at the DHCP Server page which gives us a description on DHCP and what it is used for. Read this along with the things to note, then click **Next**.



6. Now we are at the Confirm installations selections page, put a check in **Restart the destination server automatically if required**, select **Yes** when it asks about automatic restarts, then click **Install**.



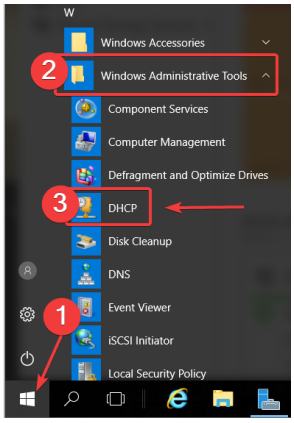
7. Once the installation finishes, select **Close**.



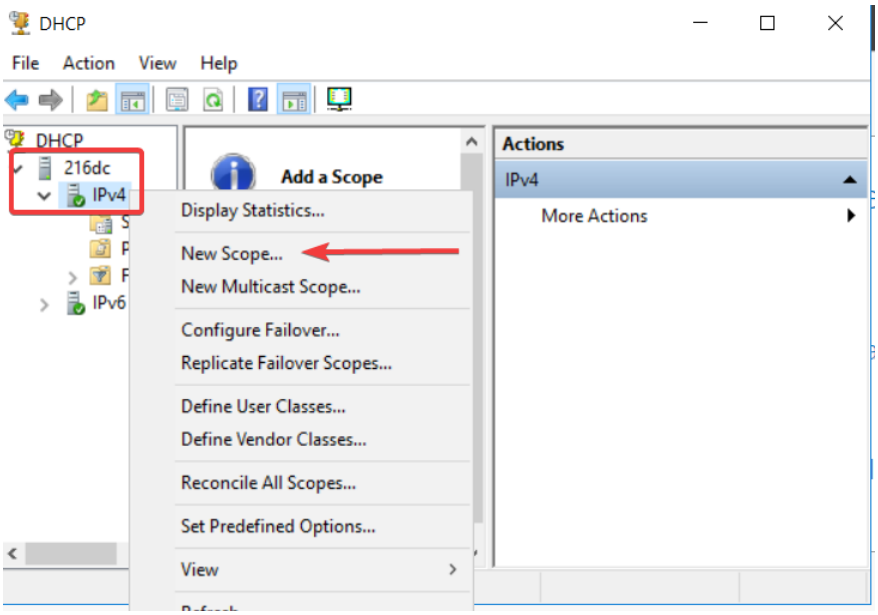
2. Creating a DHCP Scope

2.1 Configuring an IPv4 Scope

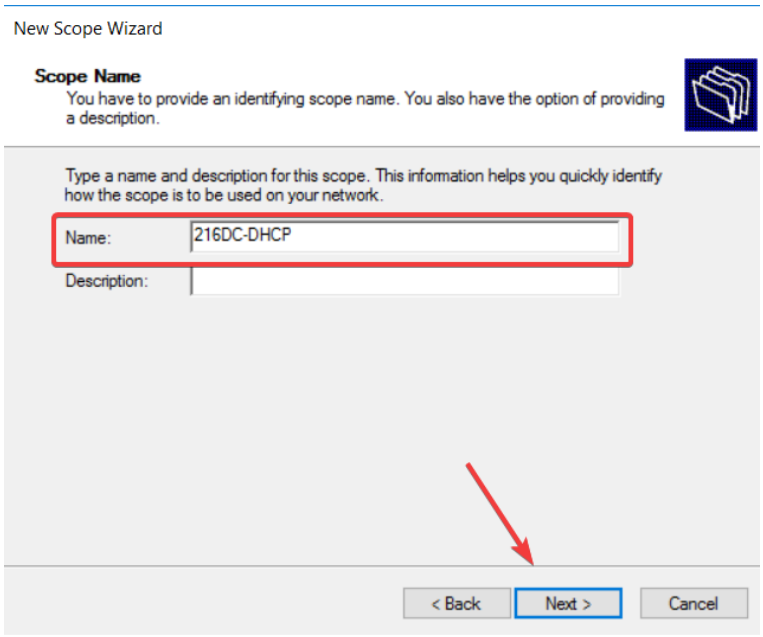
1. We will be using the DHCP MMC to configure a DHCP scope. *A scope is a range of IP addresses assigned to computers requesting an IP address*. We must create and configure a scope before dynamic IP addresses can be assigned. To open the DHCP MMC we need to go to **Start>Windows Administrative Tools>DHCP**.



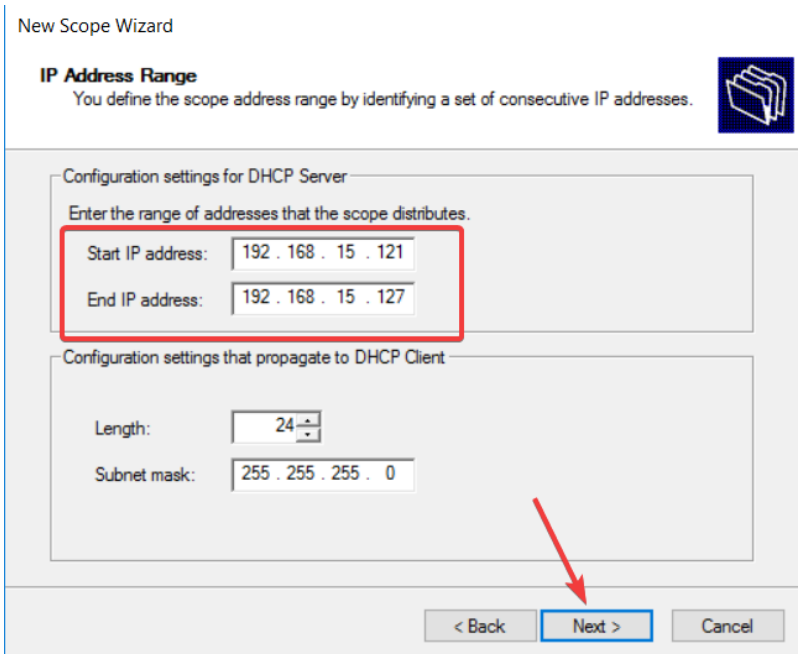
2. In the DHCP MMC expand the **216DC** node, then right click the **IPv4** node and select **New Scope**.



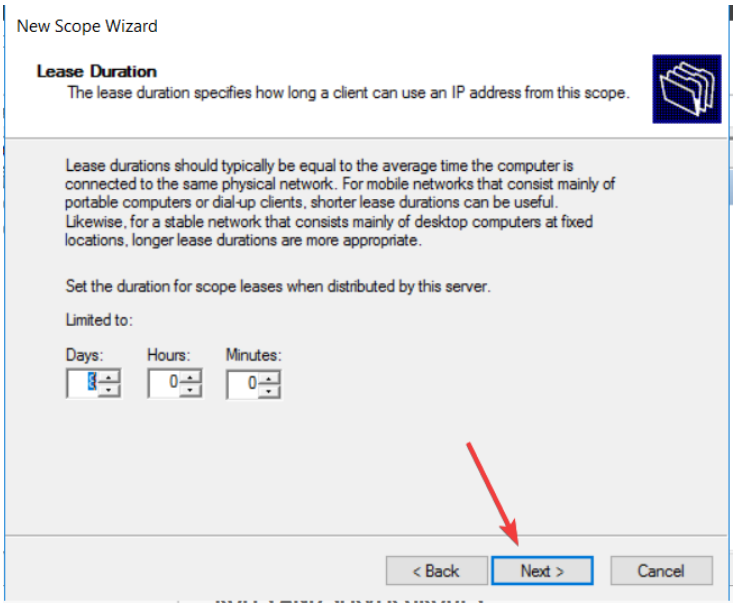
3. Once the New Scope Wizard pops up click **Next**. On the Scope Name page, we will enter a name for the scope. Type in the name **216DC-DHCP** and click **Next**.



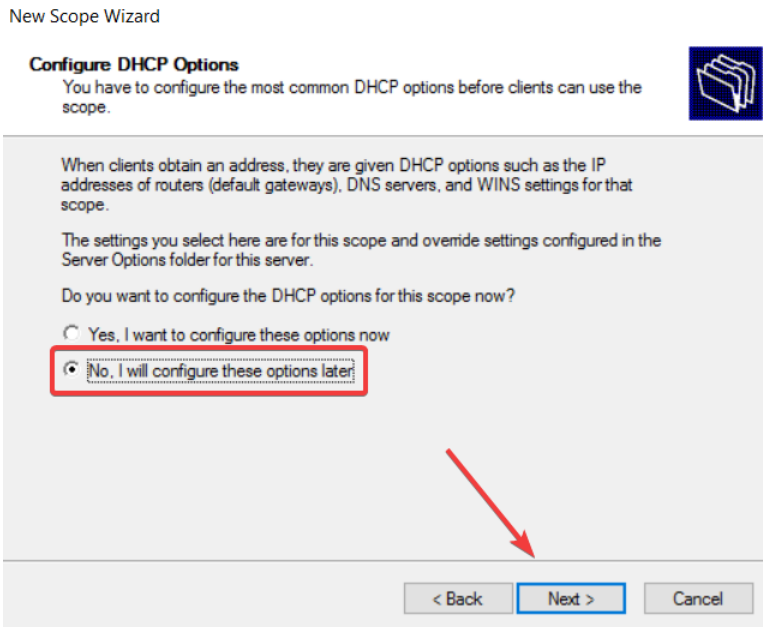
4. Now we need to enter our IP Address Range. We will use a start IP address of **192.168.15.121** and an ending IP address of **192.168.15.127**, then click **Next**.



5. Leave the Add Exclusions and Delays page blank and click **Next**. On the Lease Duration page click **Next**, we will leave this setting at 8 days. *The lease duration is the time period that an IP address is allocated to a client on the scope*.



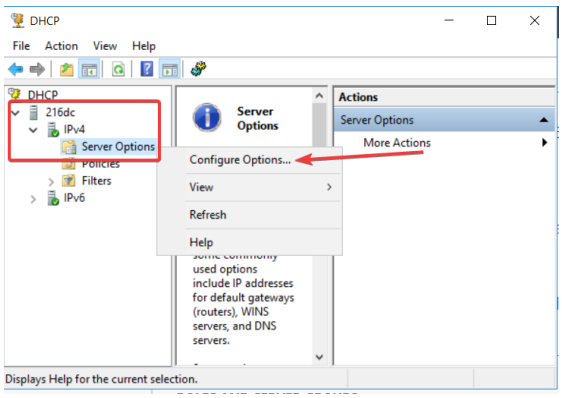
6. On the Configure DHCP Options select **No, I will configure these options later** and click **Next**, then **Finish** on the next page to complete the New Scope Wizard.



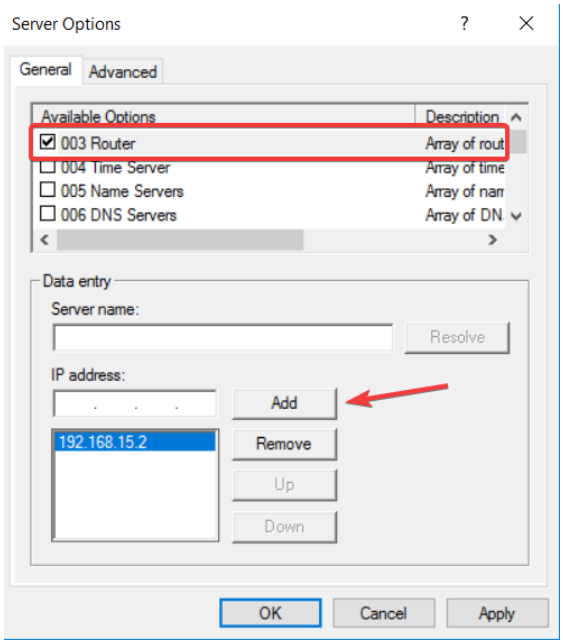
3. Configuring Server Options and Activating the Scope

3.1 Configuring Server Options

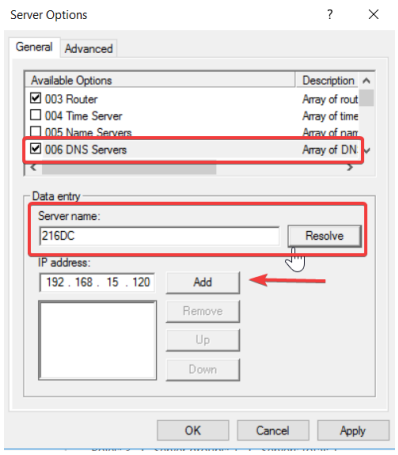
1. In the DHCP MMC expand **216dc**, expand **IPv4**, and right click on **Server Options** and select **Configure Options**. *Server Options are supplied to all DHCP clients receiving addresses from the server, while Scope Options are only for DHCP clients receiving addresses from a particular scope. Scope options can however override Server options.* ***In other words, Server Options are set globally while Scope Options are set for only 1 scope.***



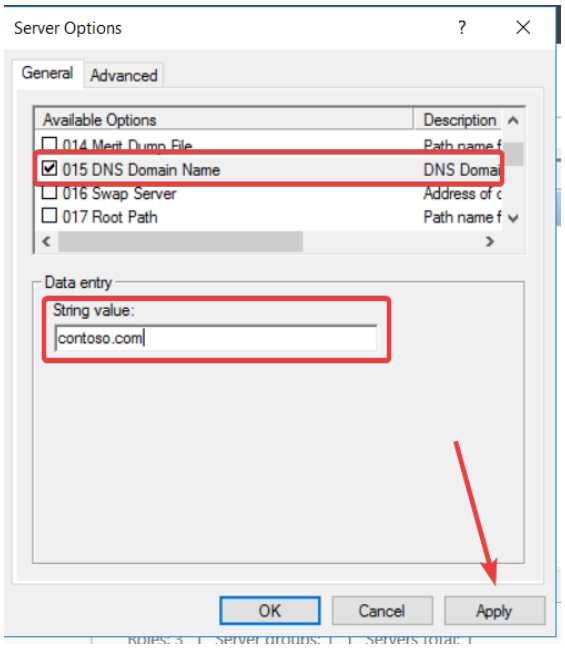
2. On the Server Options box under the General tab, put a check in **003 Router**. In the IP address box put **192.168.15.2** and click **Add**.



3. Scroll down and put a check in **006 DNS Servers**, under Server name put **216DC** and click **Resolve**. This should fill in the IP address of our server in the IP address box, click **Add**.

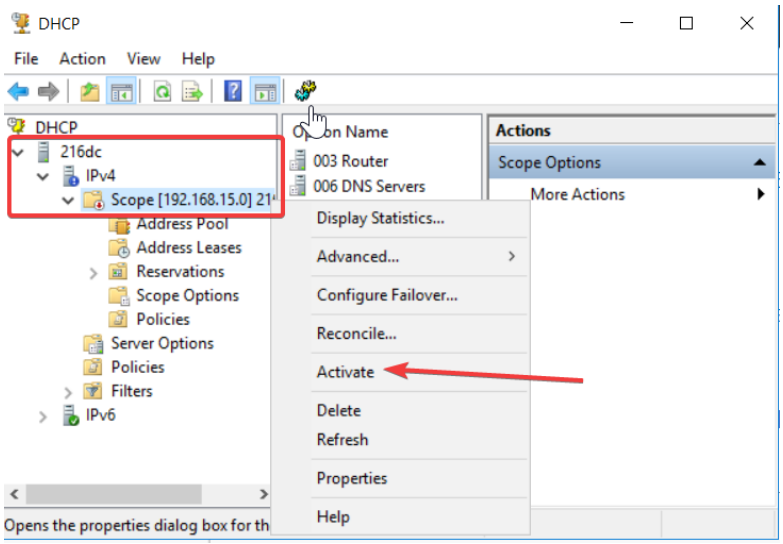


4. Scroll down further and put a check in **015 DNS Domain Name**. Enter a String value of "**contoso.com**" and click **Apply**.



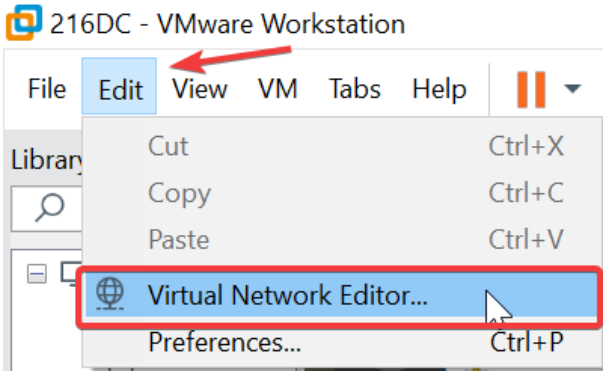
3.2 Activating the Scope

1. In the DHCP MMC expand **216dc**, expand **IPv4**, right click on **Scope** and select **Activate**.

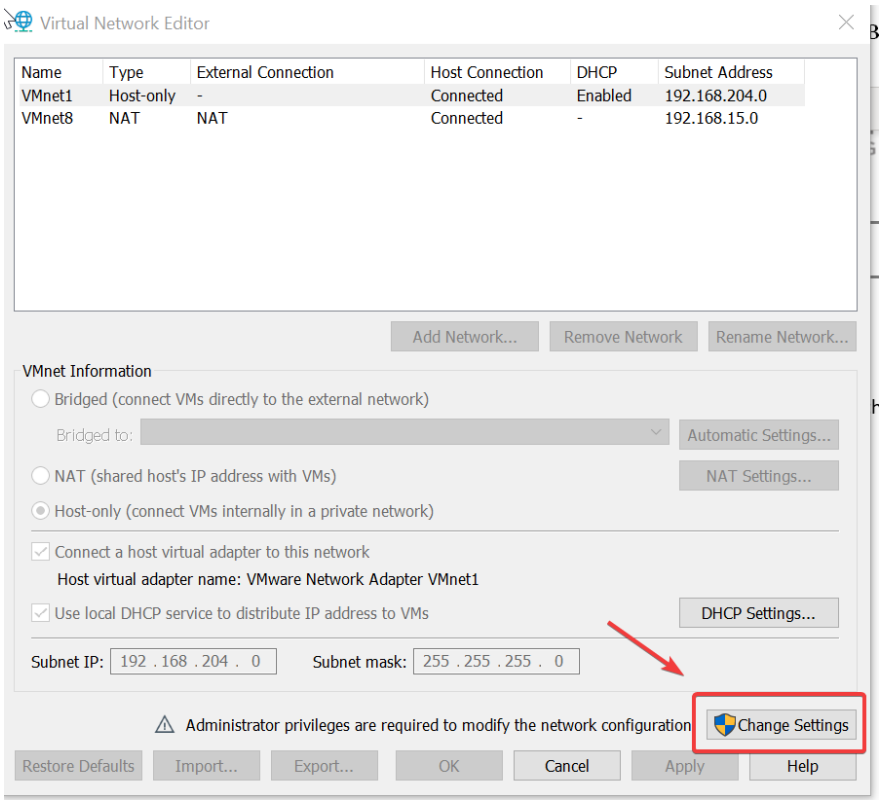


3.3 Disabling DHCP on VMware Workstation 15 Pro (Optional if hosting Windows Server on a virtual machine)

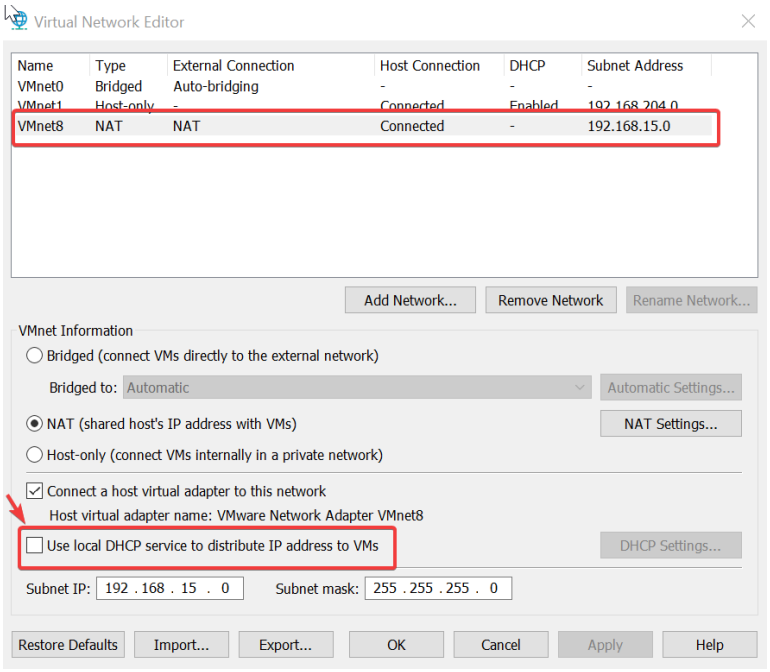
1. In order for our DHCP Server to be able to assign IP addresses to our virtual network we need to disable the DHCP service on VMware Workstation. To do this on VMware select **Edit** and go to **Virtual Network Editor**.



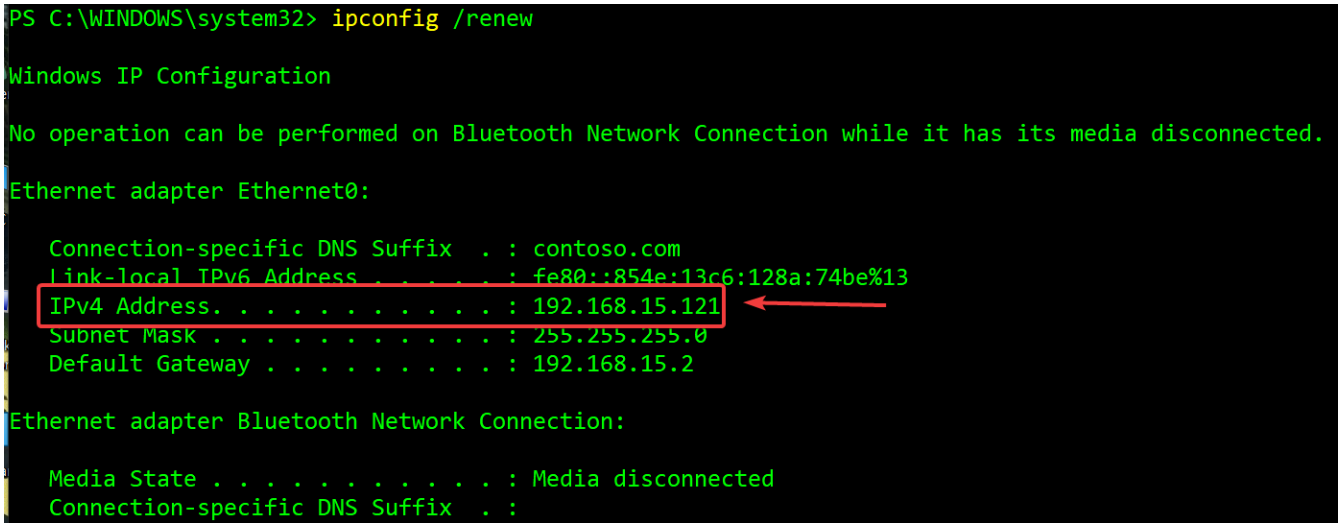
2. On Virtual Network Editor, select **Change Settings** at the bottom of the page. When the UAC box pops up asking you to allow changes to this device click **Yes**.



3. When the next screen loads up, highlight **VMnet8/NAT** and uncheck where it says **Use local DHCP service to distribute IP address to VMs**. Click **Apply** then **OK**.

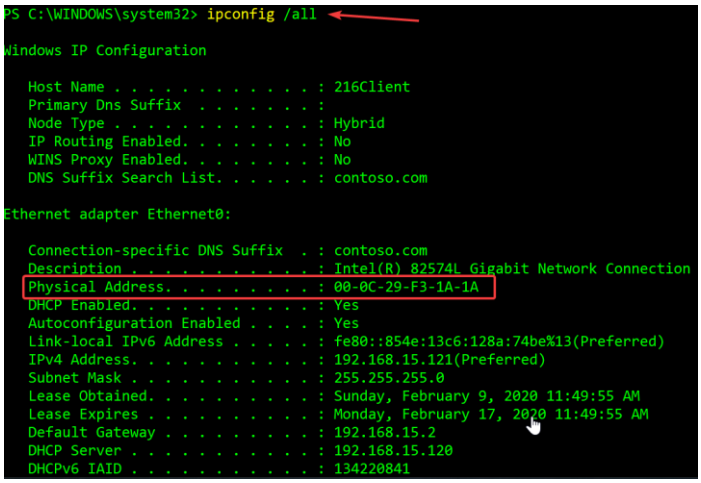


4. Now we want to log in to our 216Client machine and open up PowerShell and Run as administrator. Enter the commands **ipconfig /release** and then **ipconfig/renew** as shown in the screenshot below. Notice how we have an IP address in our configured scope, this shows we have configured our DHCP server properly.

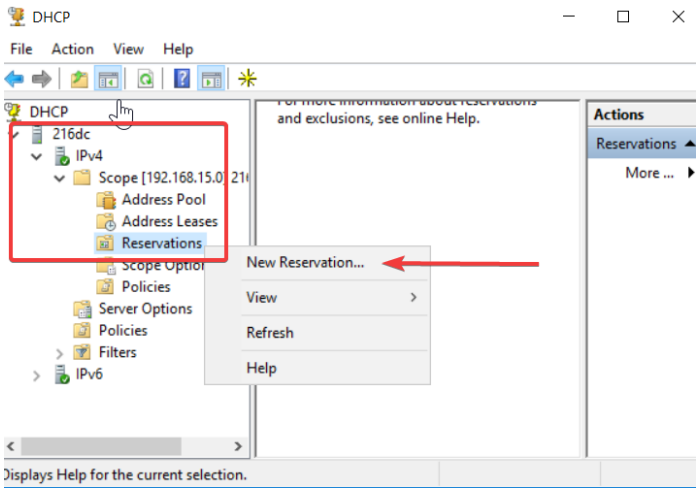


3.4 Configuring a DHCP Reservation

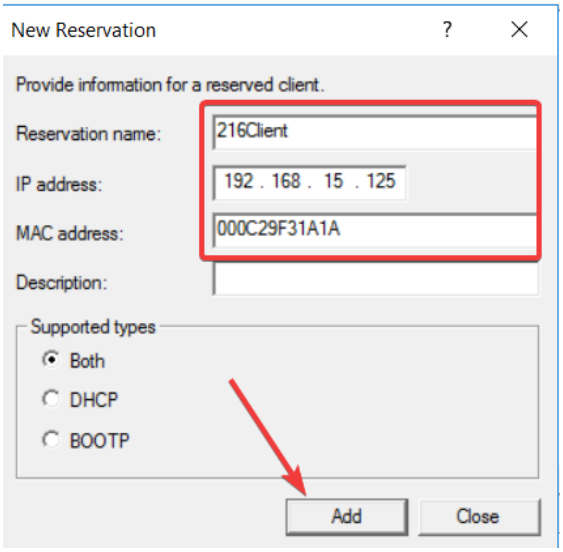
1. To create a New Reservation for the 216Client machine, we will need the MAC address of 216Client. *A reservation is a manually allocated IP address for permanent use by a DHCP client*. *A Reservation is not to be confused with an Exclusion Range.* **An exclusion range is a range of IP addresses within a scope that are excluded from the scope and not assigned via DHCP. A reservation is an IP address within the scope that is associated with a specific MAC address and assigned to that particular MAC address.** On the client open up PowerShell and type the command **ipconfig /all.** The MAC address will be the 12-digit number under Physical Address, in this example ours is 00-0C-29-F3-1A-1A. Make a note of this MAC address we will need it in an upcoming step.



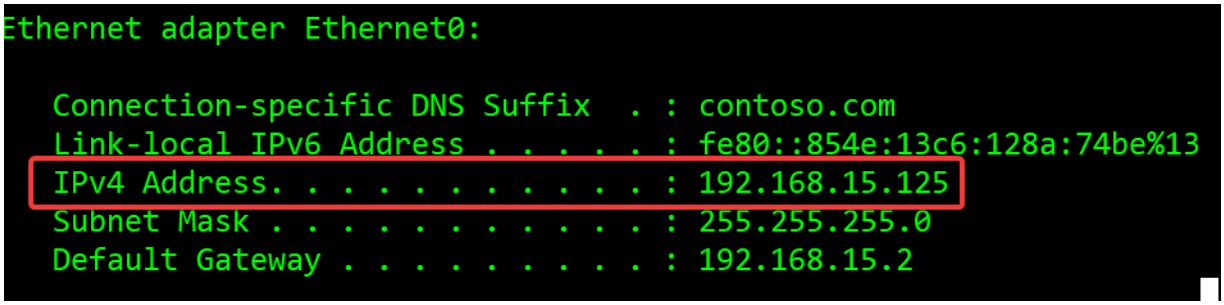
2. Go back to the DHCP MMC on the 216DC machine and expand **216dc**, expand **IPv4**, expand **Scope**, highlight **Reservations** then right click on it and select **New Reservation**.



3. In the New Reservation box we will enter the **216Client name**, an **IP Address of 192.168.15.125** and the previously noted MAC address without the dashes. Leave the rest on default and click **Add** and then **Close**.



4. Now to verify that our client has a reserved IP address of 192.168.15.125 we will go back to PowerShell on the 216Client and type the command "**ipconfig /release; ipconfig /renew; ipconfig /all**". You can save time by chaining multiple commands together by separating each command with a semicolon. As you can see in the screenshot below, we have an IP address of 192.168.15.125 so we know that our reservation is working.



5. We can also verify that our client has a reserved IP address by navigating back to the DHCP MMC and expanding the Reservations tab. The IP address of **192.168.15.125** will show up under **Reservations**.