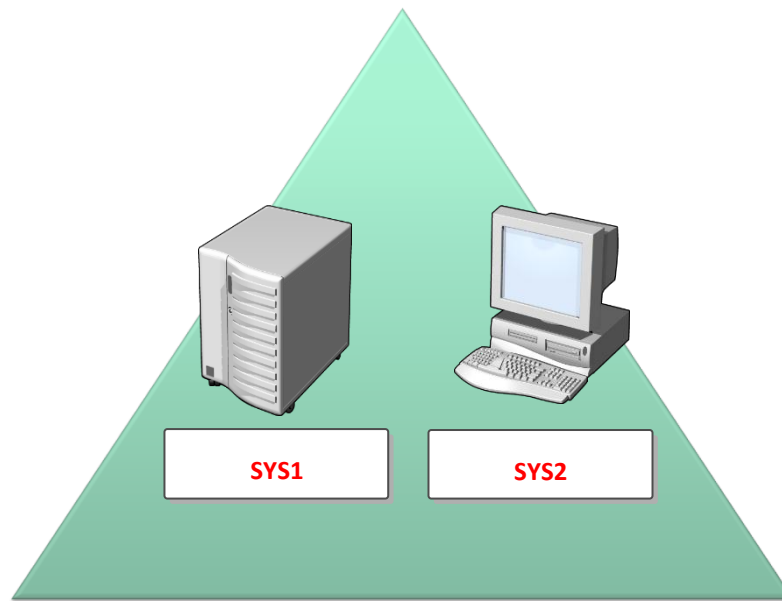


DYNAMIC HOST CONFIGURATION PROTOCOL (DHCP)

Prerequisites:

Before working on this lab, you must have

1. A computer running windows 2012 server or Domain Controller.
2. A computer running windows 2012 server or windows 7.



MICROSOFT.COM

SYS1

Domain Controller / DHCP Server

IP Address	10.0.0.1
Subnet Mask	255.0.0.0
Preferred DNS	10.0.0.1

SYS2

Member Server / Client

IP Address	10.0.0.2
Subnet Mask	255.0.0.0
Preferred DNS	10.0.0.1

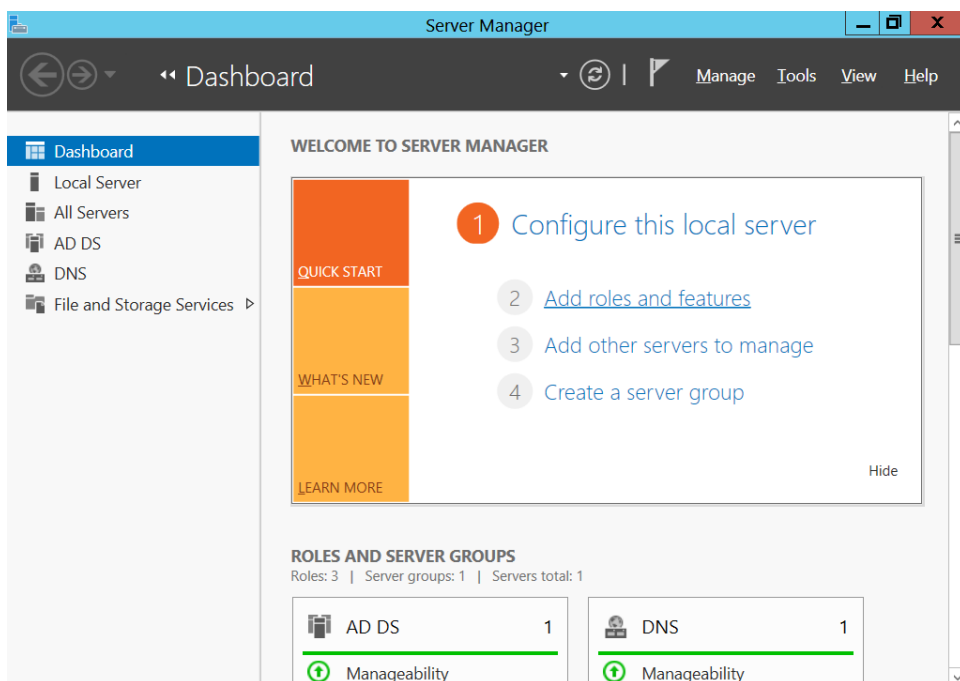
Lab – 1: Installing DHCP Service

SYS1 - CONFIGURATION

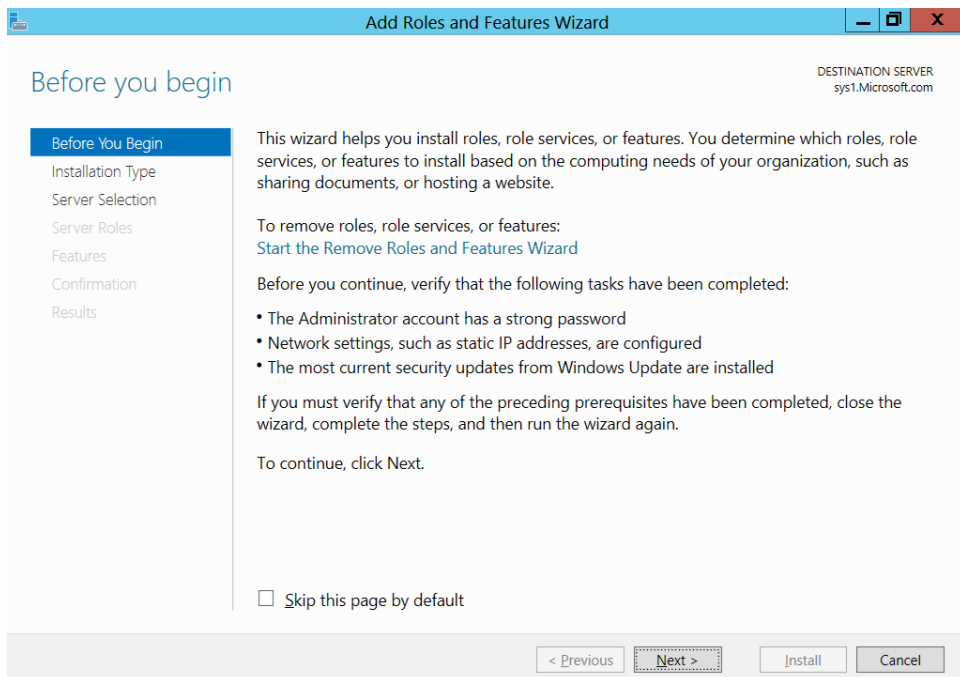
1. Click **Server Manager**.



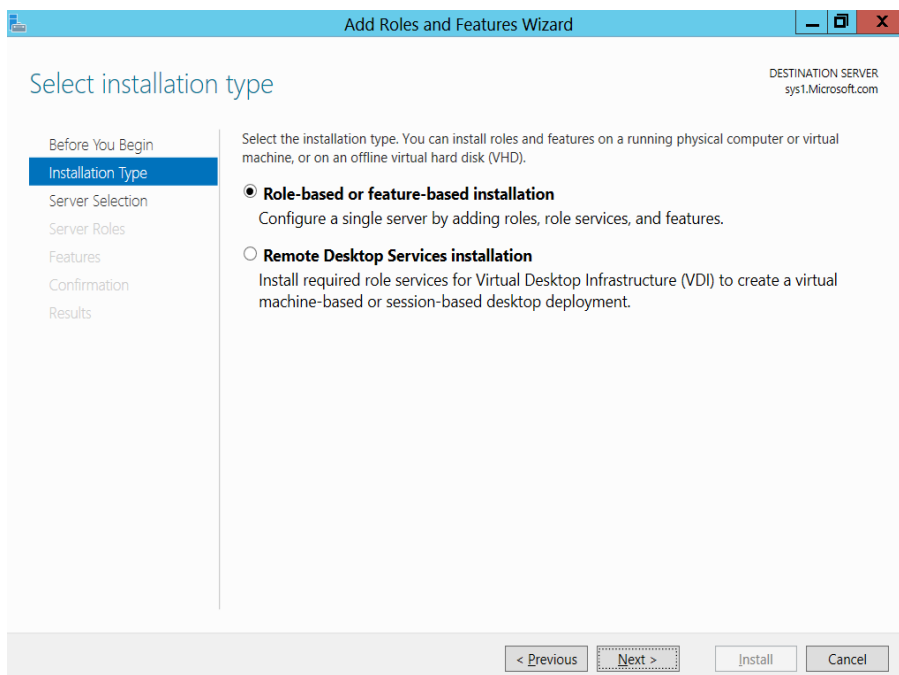
2. In the Server Manager Console, Select **Add roles and features**



3. In Before you begin page, click **Next**.



4. Select **Role-based or feature-based installation**, click **Next**.

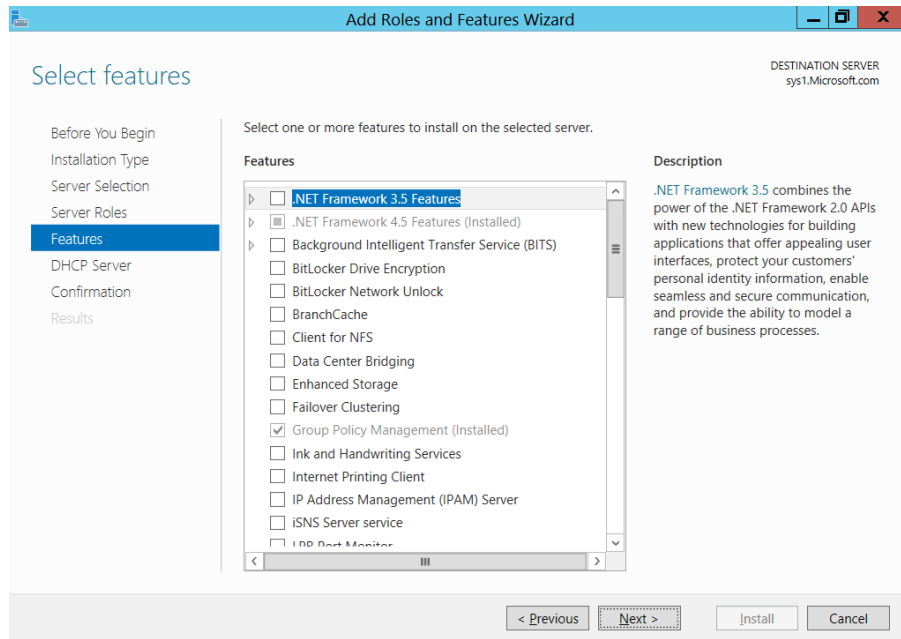
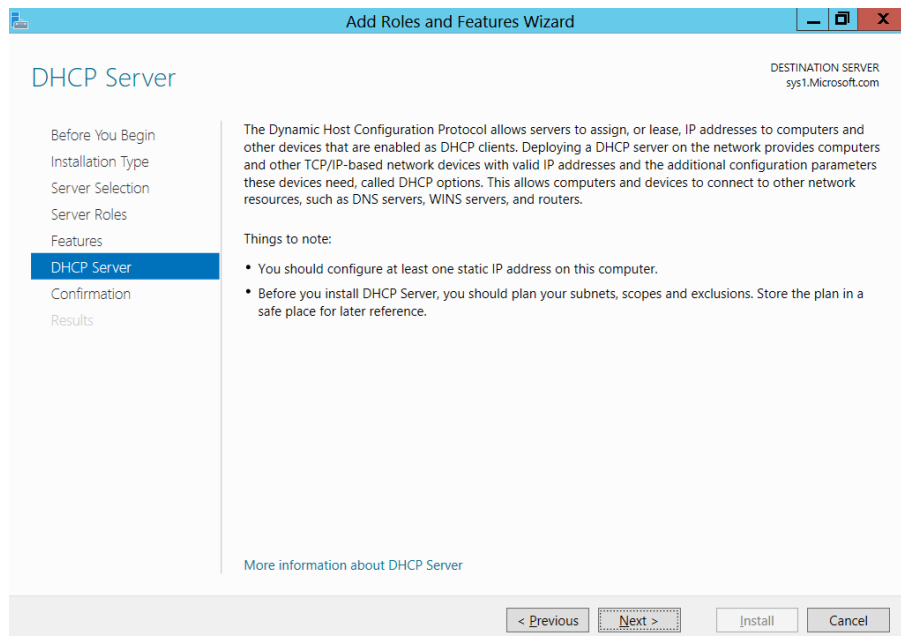


5. Select a server (**sys1.Microsoft.com**) from the server pool and click **Next**.

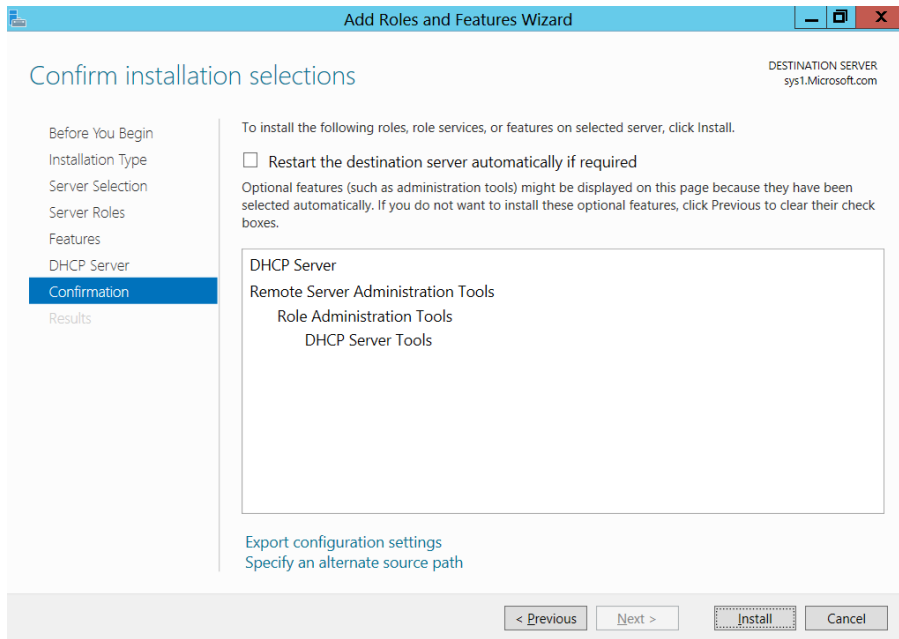
The screenshot shows the 'Add Roles and Features Wizard' window. The title bar says 'Add Roles and Features Wizard'. The main heading is 'Select destination server'. In the top right corner, it says 'DESTINATION SERVER sys1.Microsoft.com'. On the left, there is a navigation pane with the following items: 'Before You Begin', 'Installation Type', 'Server Selection' (which is 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.' Below this are two radio buttons: 'Select a server from the server pool' (which is selected) and 'Select a virtual hard disk'. Below the radio buttons is a section titled 'Server Pool'. It contains a 'Filter:' text box. Below the filter is a table with the following columns: 'Name', 'IP Address', and 'Operating System'. The table has one row: 'sys1.Microsoft.com', '10.0.0.1', and 'Microsoft Windows Server 2012 Standard Evaluation'. Below the table, it says '1 Computer(s) found'. Below that, it says 'This page shows servers that are running Windows Server 2012, 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 >', 'Install', and 'Cancel'.

6. In select server roles, check the box DHCP Server and click **Next**.

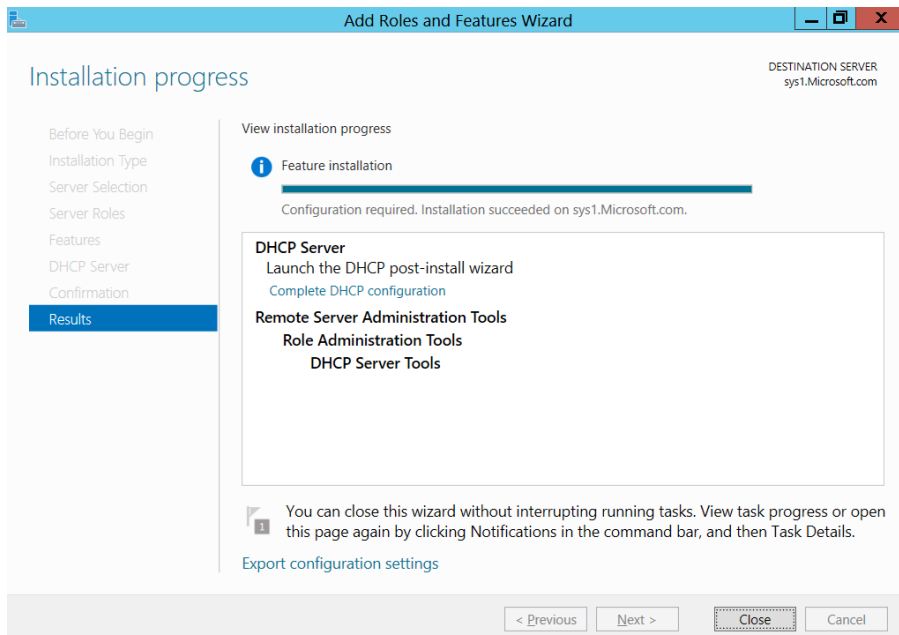
The screenshot shows the 'Add Roles and Features Wizard' window. The title bar says 'Add Roles and Features Wizard'. The main heading is 'Select server roles'. In the top right corner, it says 'DESTINATION SERVER sys1.Microsoft.com'. On the left, there is a navigation pane with the following items: 'Before You Begin', 'Installation Type', 'Server Selection', 'Server Roles' (which is highlighted), 'Features', 'DHCP Server', 'Confirmation', and 'Results'. The main area contains the following text: 'Select one or more roles to install on the selected server.' Below this is a section titled 'Roles'. It contains a list of roles with checkboxes: 'Active Directory Certificate Services', 'Active Directory Domain Services (Installed)' (checked), 'Active Directory Federation Services', 'Active Directory Lightweight Directory Services', 'Active Directory Rights Management Services', 'Application Server', 'DHCP Server' (checked), 'DNS Server (Installed)' (checked), 'Fax Server', 'File And Storage Services (Installed)' (checked), 'Hyper-V', 'Network Policy and Access Services', 'Print and Document Services', 'Remote Access', 'Remote Desktop Services', and 'Volume Activation Services'. To the right of the list is a 'Description' section. It contains the following text: 'Dynamic Host Configuration Protocol (DHCP) Server enables you to centrally configure, manage, and provide temporary IP addresses and related information for client computers.' At the bottom, there are four buttons: '< Previous', 'Next >', 'Install', and 'Cancel'.

7. In select features, click **Next**.8. Click **Next**.

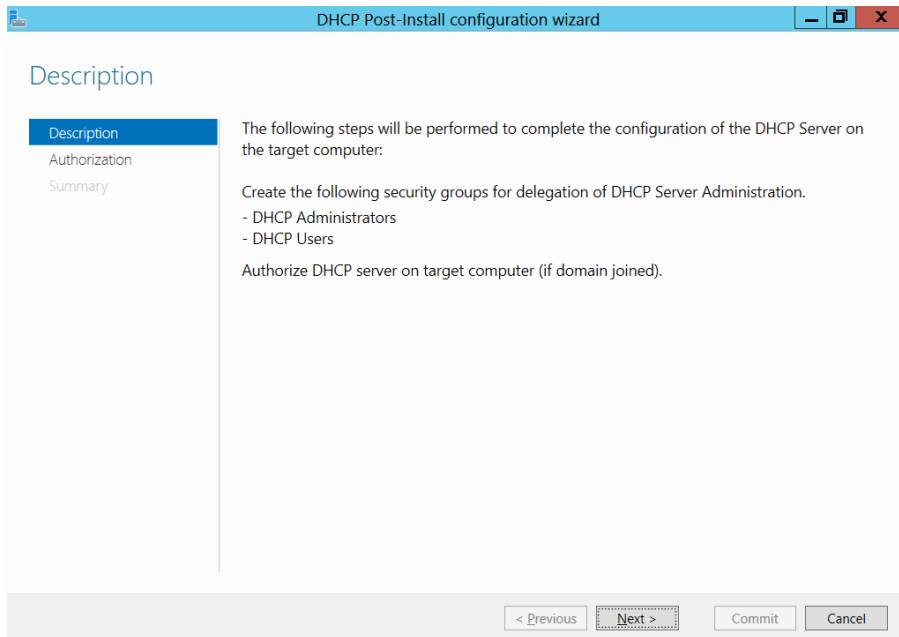
9. Check Restart the destination server automatically if required and click **Install**.



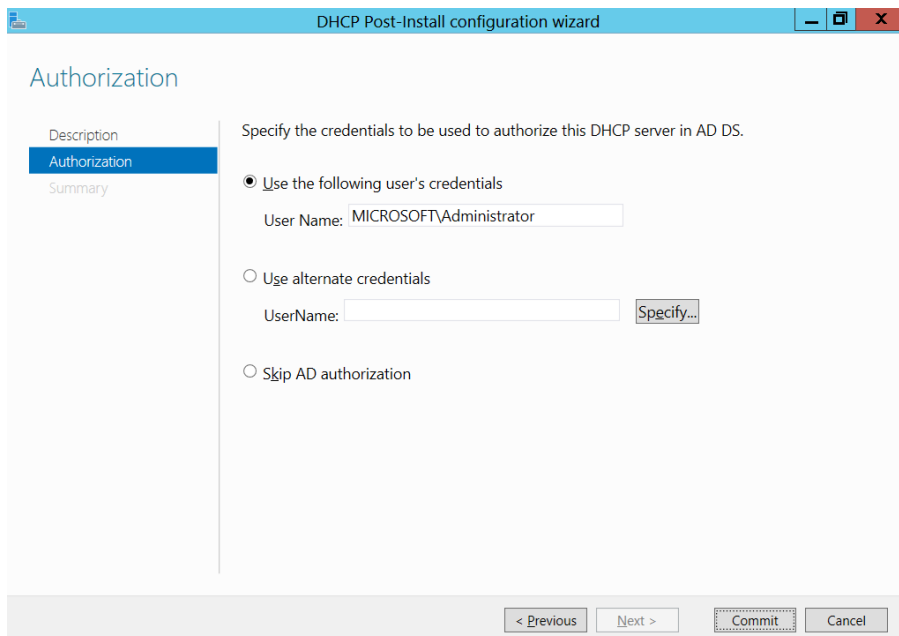
10. Select **Complete DHCP configuration**.



11. In DHCP Post-install configuration wizard, click **Next**.



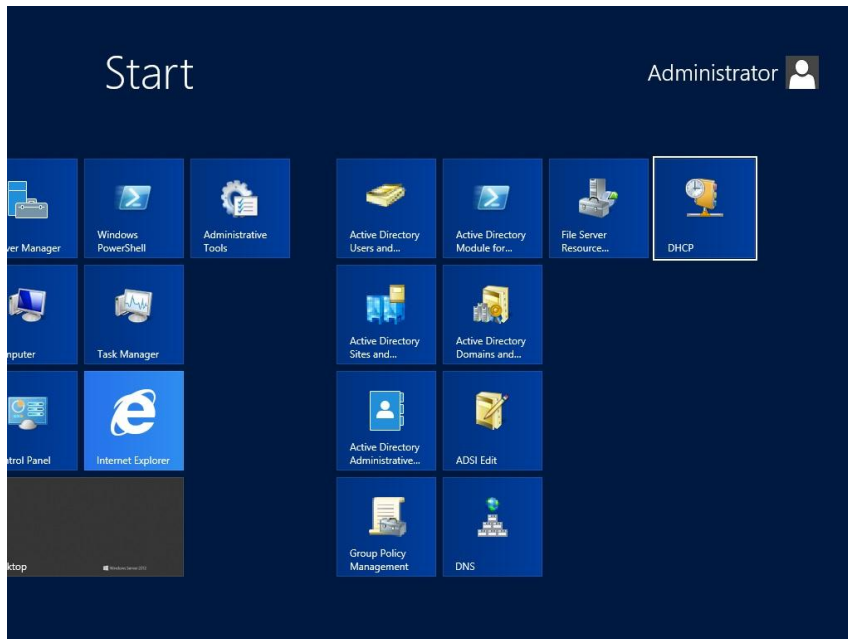
12. Click **Commit** to Authorize the DHCP Server.



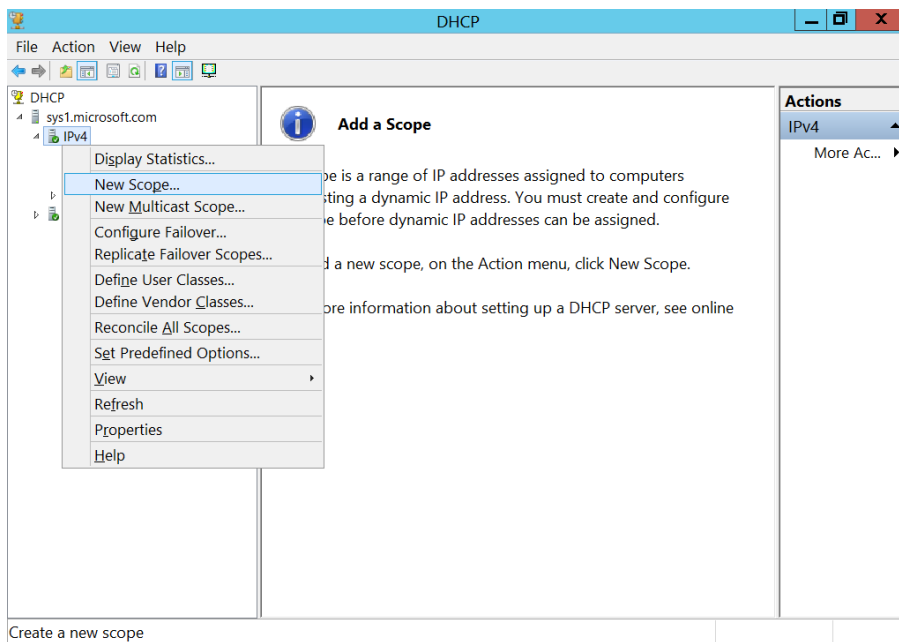
13. Click **Close** to Complete the Authorization of DHCP Server.

Lab – 2: Creating a scope

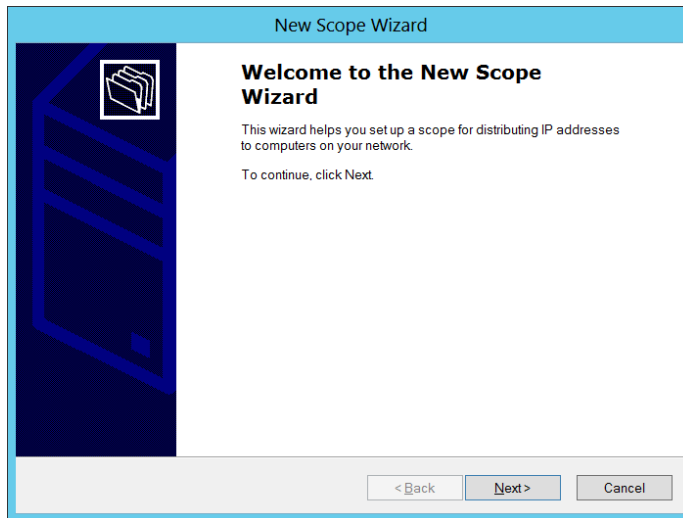
1. Go to Start, select **DHCP**.



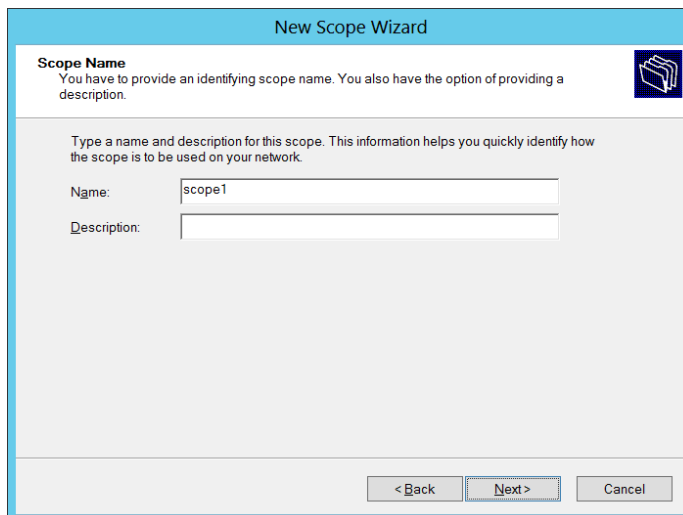
2. Expand the System name → right click IPv4 → select **New Scope**



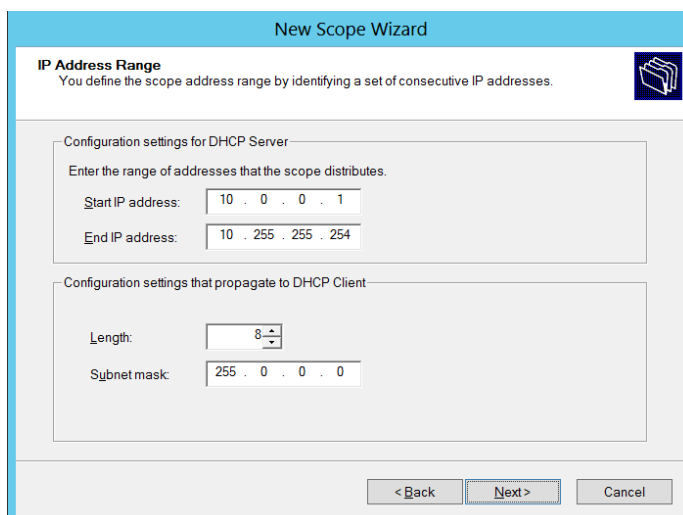
3. The New Scope wizard starts, click **Next**.



4. Enter **Name** and a **Description** for the scope and click **Next**.

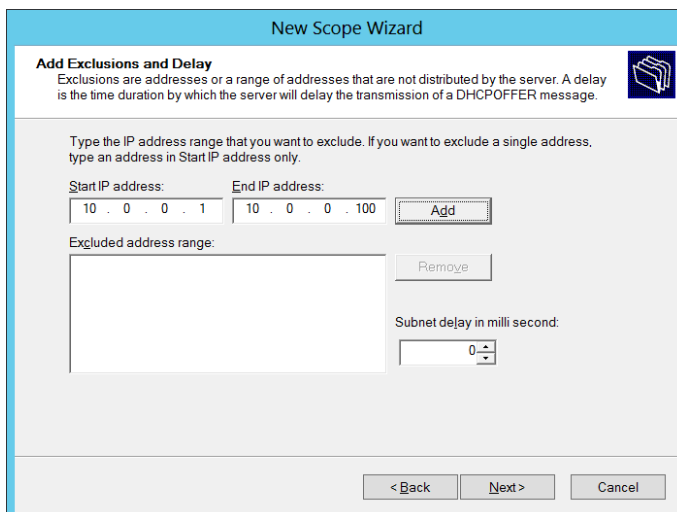
The image shows the 'New Scope Wizard' window at the 'Scope Name' step. The title bar says 'New Scope Wizard'. The text reads: 'Scope Name', 'You have to provide an identifying scope name. You also have the option of providing a description.', and 'Type a name and description for this scope. This information helps you quickly identify how the scope is to be used on your network.' There are two input fields: 'Name:' with the value 'scope1' and 'Description:'. At the bottom are buttons for '< Back', 'Next >', and 'Cancel'.

5. Enter the IP Address Range to be leased to clients, click **Next**.

The image shows the 'New Scope Wizard' window at the 'IP Address Range' step. The title bar says 'New Scope Wizard'. The text reads: 'IP Address Range', 'You define the scope address range by identifying a set of consecutive IP addresses.', and 'Configuration settings for DHCP Server'. There are two sections: 'Enter the range of addresses that the scope distributes.' with 'Start IP address:' (10 . 0 . 0 . 1) and 'End IP address:' (10 . 255 . 255 . 254), and 'Configuration settings that propagate to DHCP Client' with 'Length:' (8) and 'Subnet mask:' (255 . 0 . 0 . 0). At the bottom are buttons for '< Back', 'Next >', and 'Cancel'.

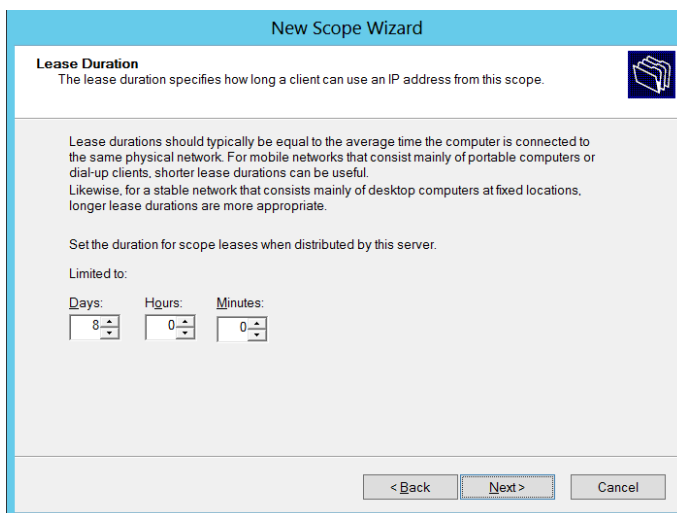
Note: Mention the scope range in the same network of DHCP server.

6. To exclude IP addresses, enter the **Start and end IP address**, click **Add**. Click **Next**.



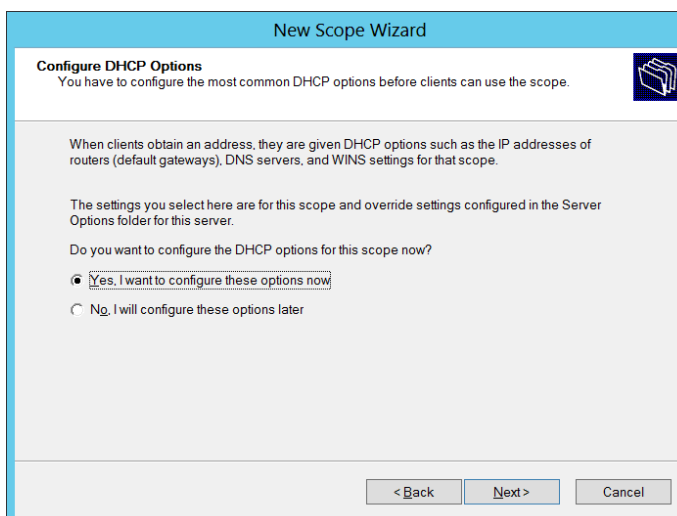
The screenshot shows the 'New Scope Wizard' window, specifically the 'Add Exclusions and Delay' step. The title bar reads 'New Scope Wizard'. Below the title bar, the section is titled 'Add Exclusions and Delay' with a subtext: 'Exclusions are addressees or a range of addresses that are not distributed 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 'Start IP address' containing '10 . 0 . 0 . 1' and another for 'End IP address' containing '10 . 0 . 0 . 100'. An 'Add' button is to the right of the 'End IP address' field. Below these fields is an 'Excluded address range' text box and a 'Remove' button. To the right of the 'Excluded address range' box is a 'Subnet delay in milli second' spinner box set to '0'. At the bottom are '< Back', 'Next >', and 'Cancel' buttons.

7. In the **Lease Duration** screen, you can Increase or Decrease the value, click **Next**.



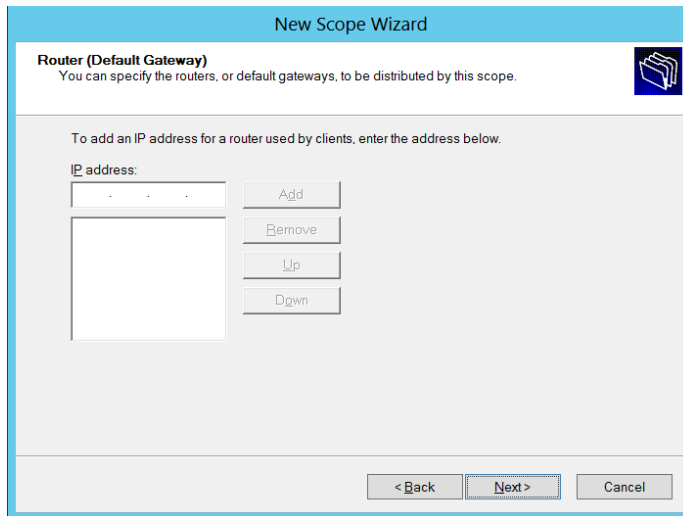
The screenshot shows the 'New Scope Wizard' window, specifically the 'Lease Duration' step. The title bar reads 'New Scope Wizard'. Below the title bar, the section is titled 'Lease Duration' with a subtext: 'The lease duration specifies how long a client can use an IP address from this scope.' There is a paragraph of explanatory text about lease durations. Below this is a section titled 'Set the duration for scope leases when distributed by this server.' followed by 'Limited to:'. There are three spinner boxes for 'Days' (set to 8), 'Hours' (set to 0), and 'Minutes' (set to 0). At the bottom are '< Back', 'Next >', and 'Cancel' buttons.

8. In the Configure DHCP Options screen, choose **Yes**, to configure DHCP options for this scope (such as routers, DNS, and WINS settings) now. Click **Next**.



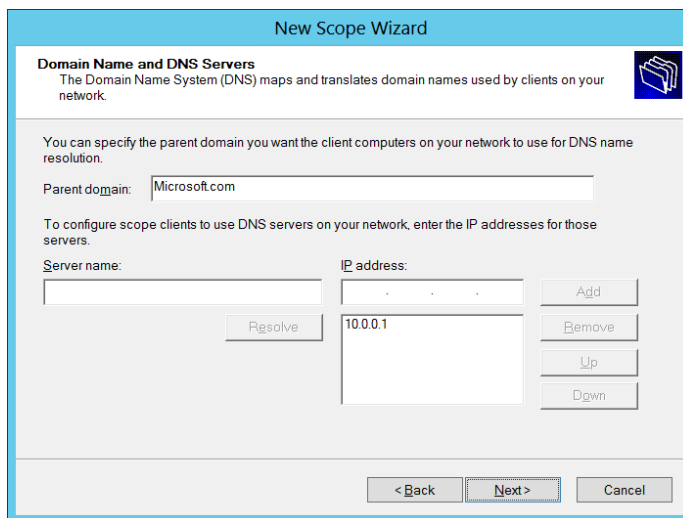
The screenshot shows the 'New Scope Wizard' window, specifically the 'Configure DHCP Options' step. The title bar reads 'New Scope Wizard'. Below the title bar, the section is titled 'Configure DHCP Options' with a subtext: 'You have to configure the most common DHCP options before clients can use the scope.' There is a paragraph of explanatory text about DHCP options. Below this is another paragraph: 'The settings you select here are for this scope and override settings configured in the Server Options folder for this server.' followed by the question 'Do you want to configure the DHCP options for this scope now?'. There are two radio button options: 'Yes, I want to configure these options now' (which is selected) and 'No, I will configure these options later'. At the bottom are '< Back', 'Next >', and 'Cancel' buttons.

9. In the **Router (Default Gateway)** screen, enter the IP address of the **router** that will function as the **default gateway** for this scope clients and click **Add**. Or, if you don't have a **Router** in your network, just click **Next**.



The screenshot shows the 'New Scope Wizard' window, specifically the 'Router (Default Gateway)' step. The title bar says 'New Scope Wizard'. Below the title, the section is 'Router (Default Gateway)' with a subtitle: 'You can specify the routers, or default gateways, to be distributed by this scope.' The main instruction reads: 'To add an IP address for a router used by clients, enter the address below.' There is a text input field labeled 'IP address:' with a placeholder ' . . .'. To the right of this field are four buttons: 'Add', 'Remove', 'Up', and 'Down'. Below the input field is a list box. At the bottom of the window are three buttons: '< Back', 'Next >', and 'Cancel'.

10. In the **Domain Name and DNS Servers** screen enter the name of the Parent Domain & IP address of the DNS server, click **Add** → click **Next**.



The screenshot shows the 'New Scope Wizard' window, specifically the 'Domain Name and DNS Servers' step. The title bar says 'New Scope Wizard'. Below the title, the section is 'Domain Name and DNS Servers' with a subtitle: 'The Domain Name System (DNS) maps and translates domain names used by clients on your network.' The main instruction reads: 'You can specify the parent domain you want the client computers on your network to use for DNS name resolution.' There is a text input field labeled 'Parent domain:' with the value 'Microsoft.com'. Below this, another instruction reads: 'To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.' There are two input fields: 'Server name:' and 'IP address:'. The 'IP address:' field has a placeholder ' . . . ' and contains the value '10.0.0.1'. To the right of these fields are four buttons: 'Add', 'Remove', 'Up', and 'Down'. Below the 'Server name:' field is a 'Resolve' button. At the bottom of the window are three buttons: '< Back', 'Next >', and 'Cancel'.

11. In the WINS Servers screen enter the IP address of the WINS server, click **Add** click **Next**, if you don't have a WINS server on your network, just click **Next**.

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.

< Back Next > Cancel

12. In the Activate Scope screen, select **YES** and click **Next**.

New Scope Wizard

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

Do you want to activate this scope now?

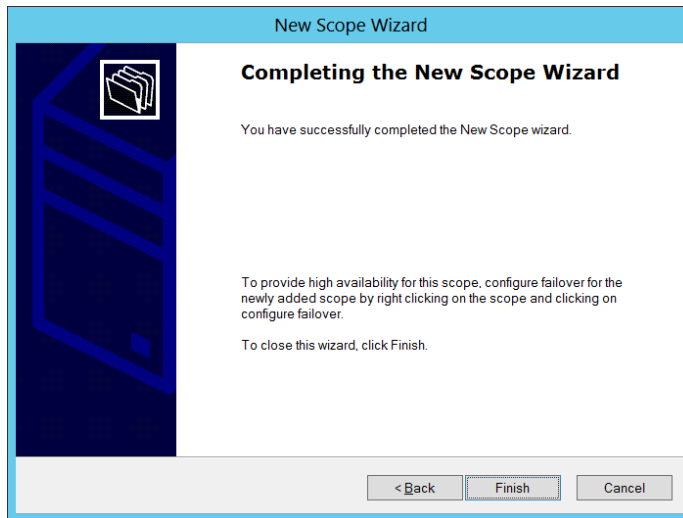
☒ Yes, I want to activate this scope now

☐ No, I will activate this scope later

< Back Next > Cancel

Note: A DHCP server can't assign IP addresses until the scope is activated.

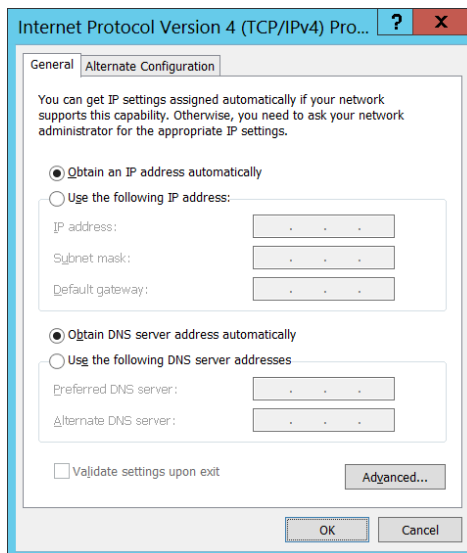
13. Click **Finish** to complete the creation of Scope.



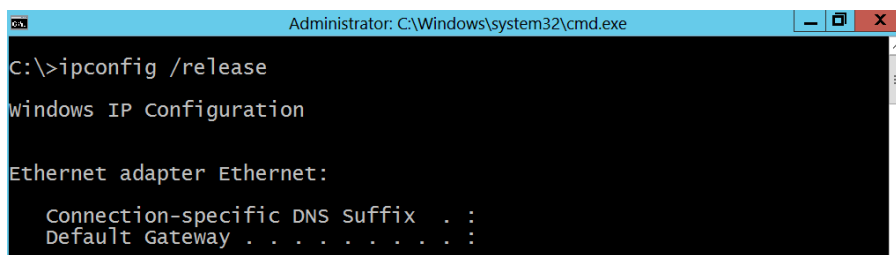
SYS2 - CONFIGURATION

Verification: In DHCP Client

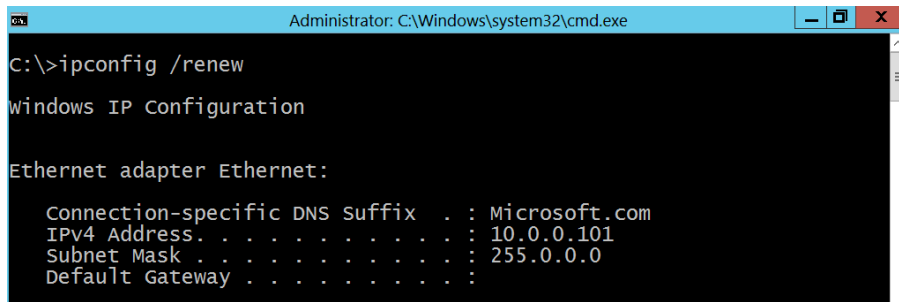
1. Right click network Icon → Select properties → click View Status and select properties → Select Internet protocol Version 4 (TCP/IPv4) Properties and select **Obtain an IP Address automatically** and **Obtain an DNS Server Address Automatically** → OK



2. Open the **Command Prompt** → and type **ipconfig /release**



3. Then type **ipconfig /renew**



```
Administrator: C:\Windows\system32\cmd.exe

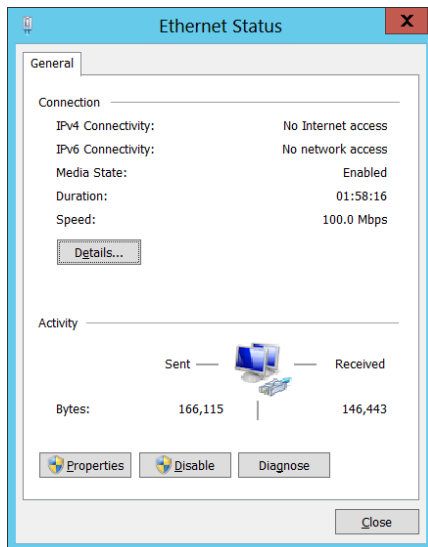
C:\>ipconfig /renew

Windows IP Configuration

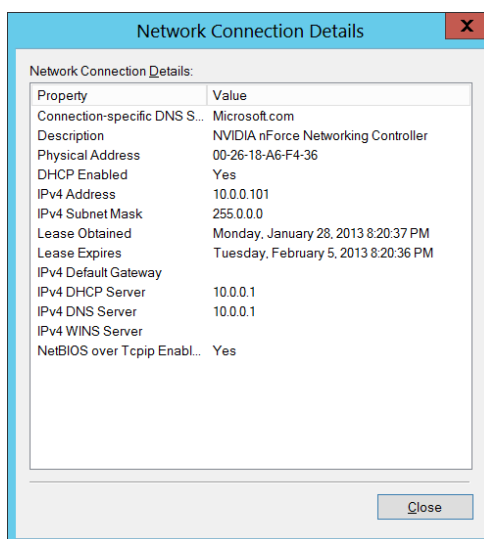
Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : Microsoft.com
    IPv4 Address. . . . . : 10.0.0.101
    Subnet Mask . . . . . : 255.0.0.0
    Default Gateway . . . . . :
```

4. After that Right click on network Icon → Select properties → click View Status and click **Details**.



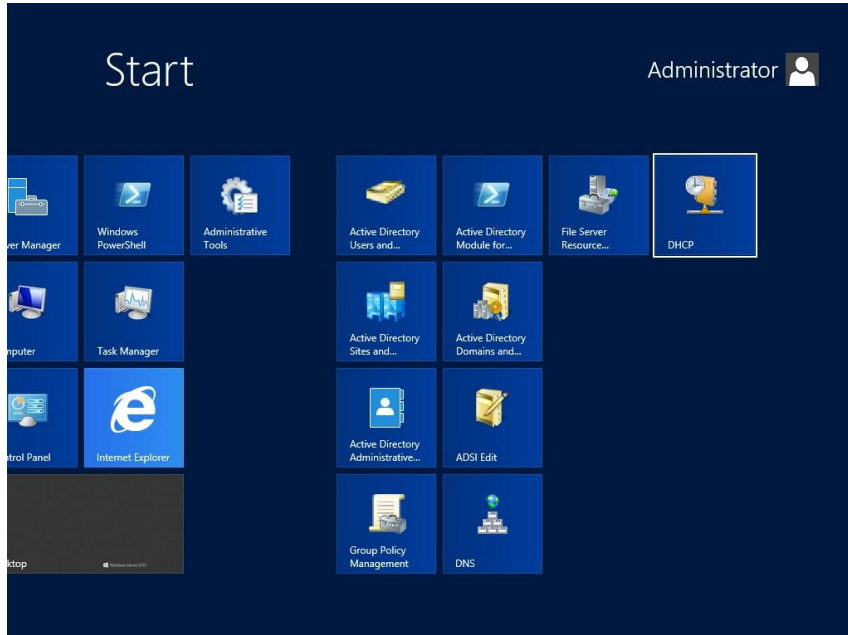
5. Verify the IP Address leased by the DHCP Server along with the lease duration and DHCP Server and DNS Server details.



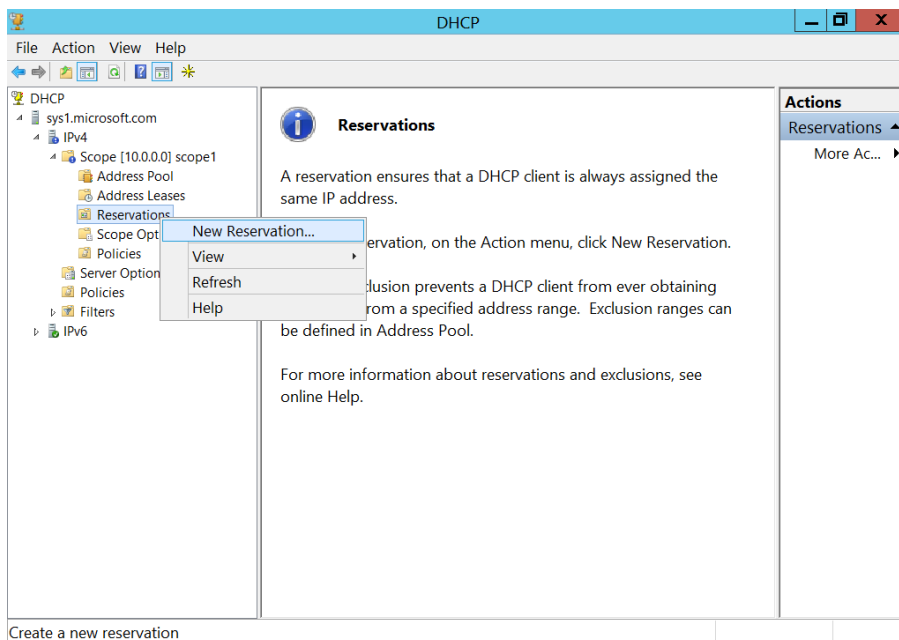
Lab – 3: Creating DHCP Reservations

SYS1 - CONFIGURATION

1. Go to Start, select **DHCP**.

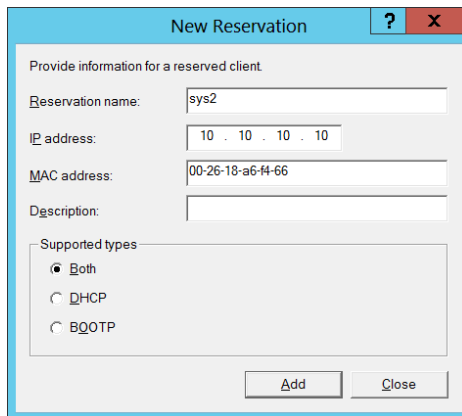


2. In the left pane of the DHCP Console, expand the Scope → Right click **Reservation** → Select **New Reservation**



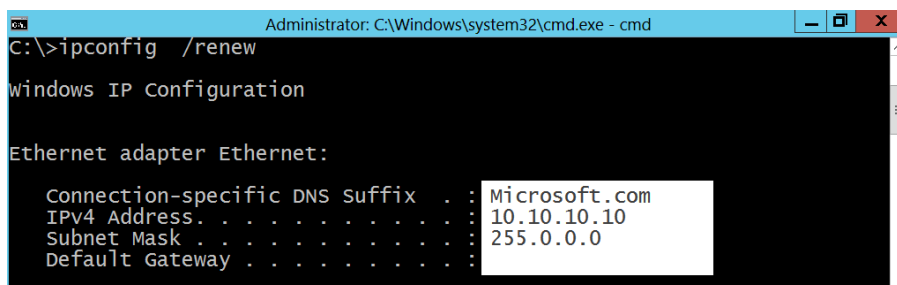
3. Type in a name for the reservation in the **“Reservation name”** text box. Then, in the **“IP address”** text box, mention the IP address that you want to be reserved. Then, enter the MAC address of the network adapter of the computer for which the reservation is being made in the box provided →click **add** →click **Close**.

Note: To Know the MAC or Physical address of the client type **ipconfig /all** or **getmac** in command prompt of client computer.



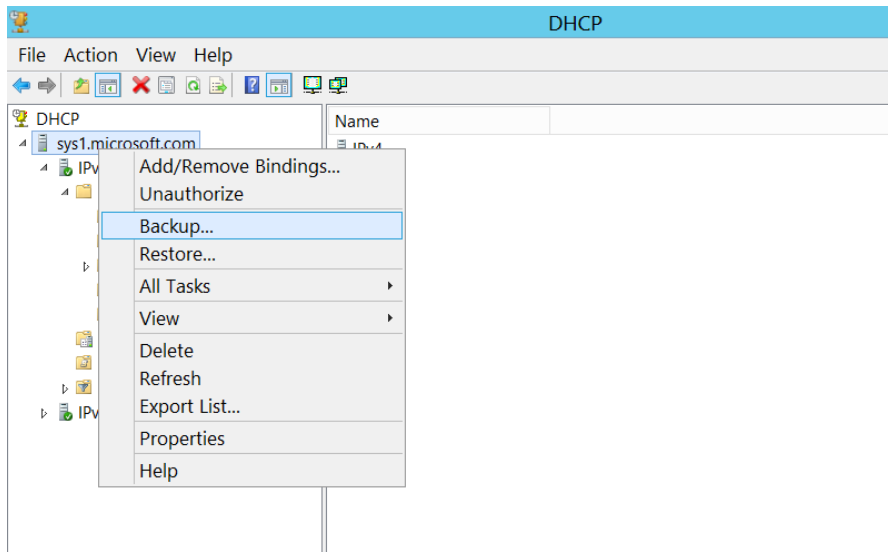
Check the output in the client computer (SYS2).

4. In the command prompt type **ipconfig /release** and **ipconfig /renew**.

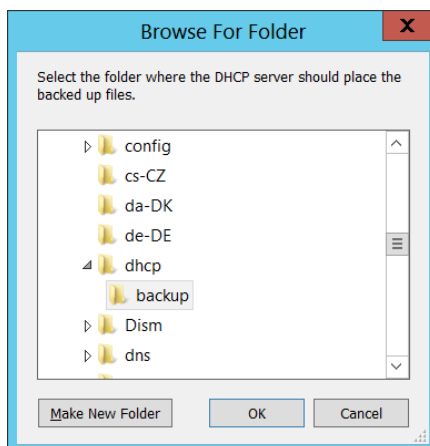


Lab – 4:DHCPServer Backup and Restore

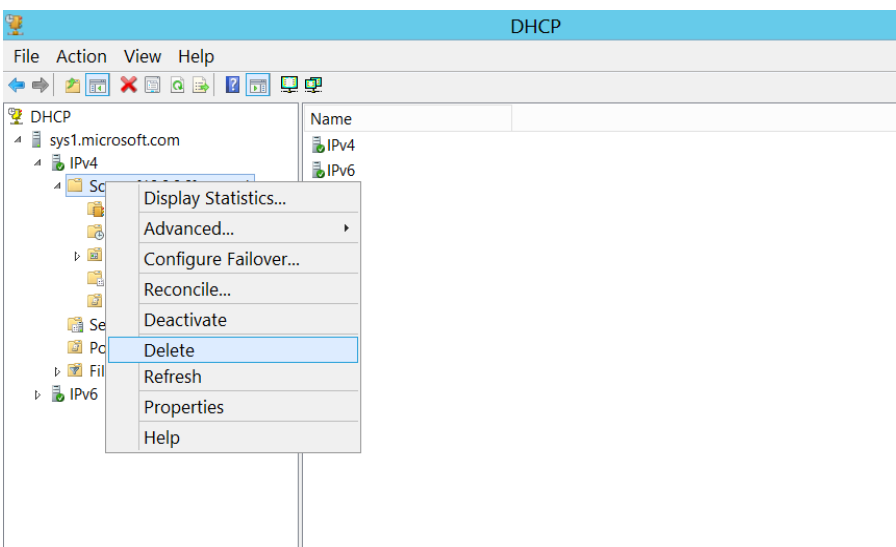
1. Go to DHCP console →right click the server name →select **Backup**



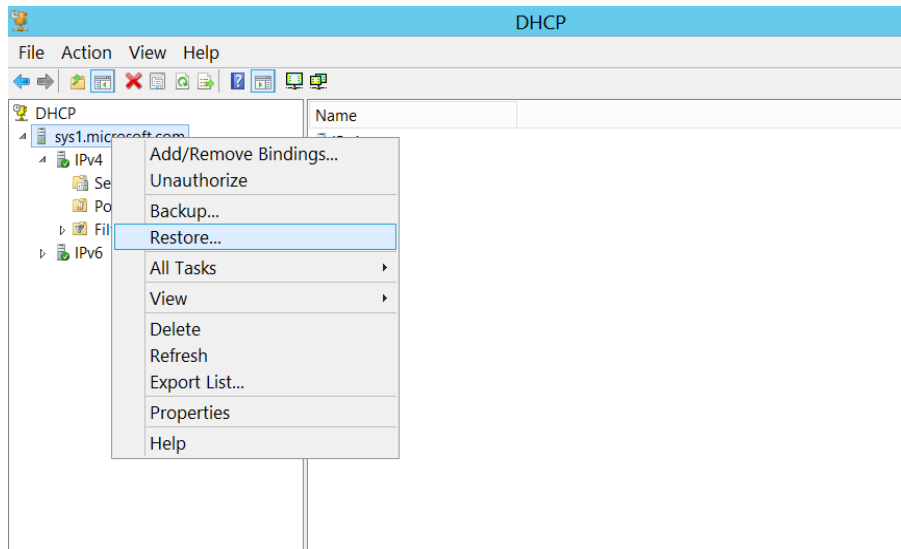
2. Select the Location to save the **backup file** →OK



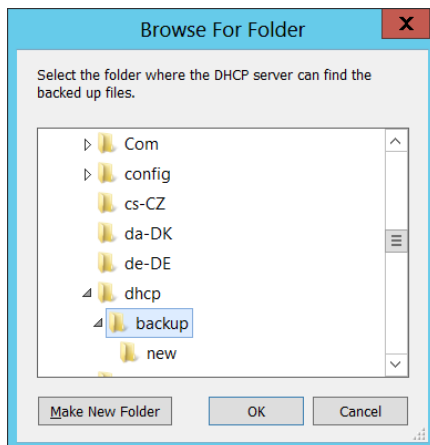
3. **Delete** the Existing scope



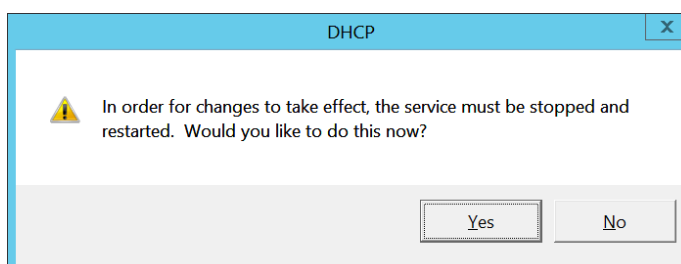
4. In DHCP Console →right click the server name →select **Restore**.



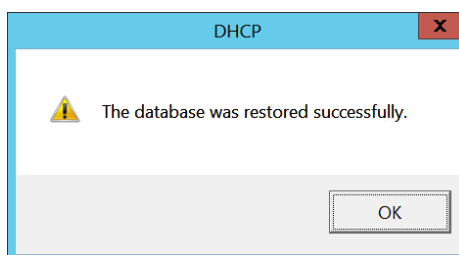
5. Select the location of file for **Restoration**.



6. Click **Yes**.



7. Click **OK** and for the Scope restored in DHCP Console.



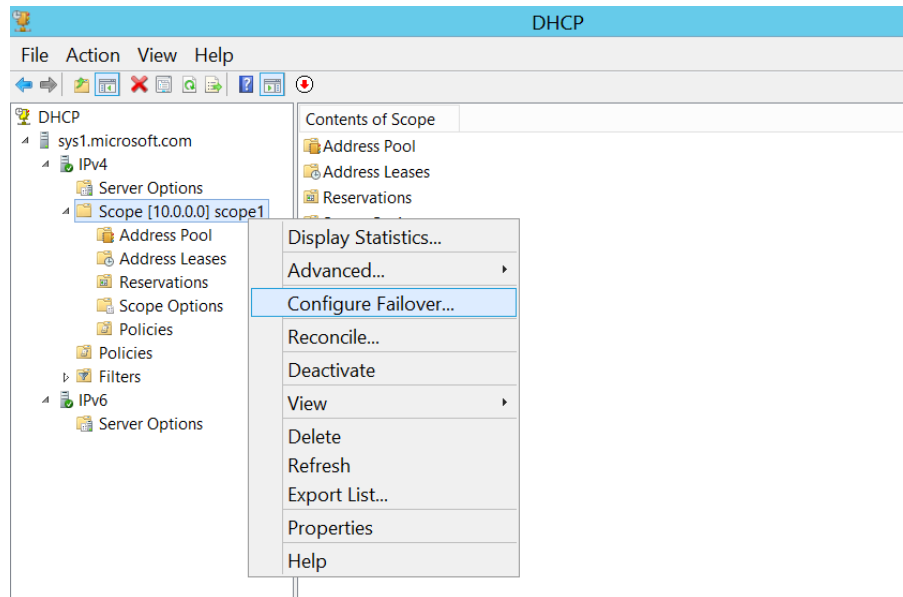
Lab – 5: Configuring DHCP Server Failover

SYS2 - CONFIGURATION

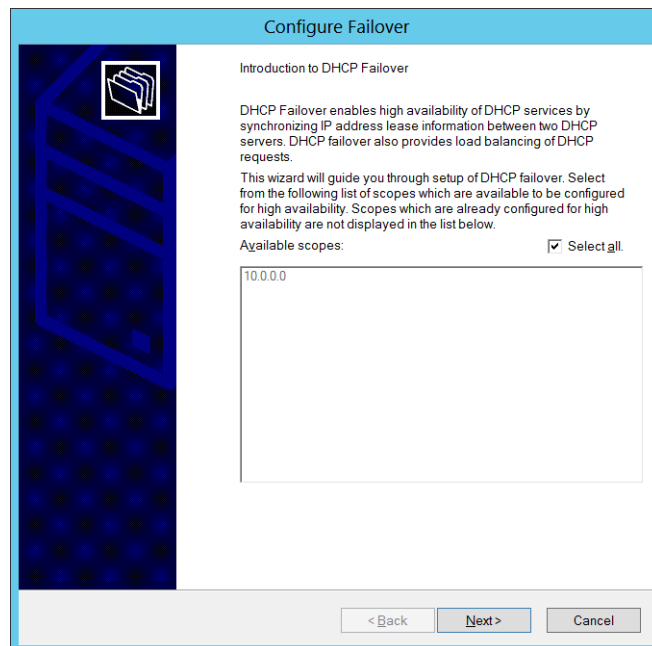
1. Install DHCP Server Role on SYS2 and Do not Authorize the Server.

SYS1 - CONFIGURATION

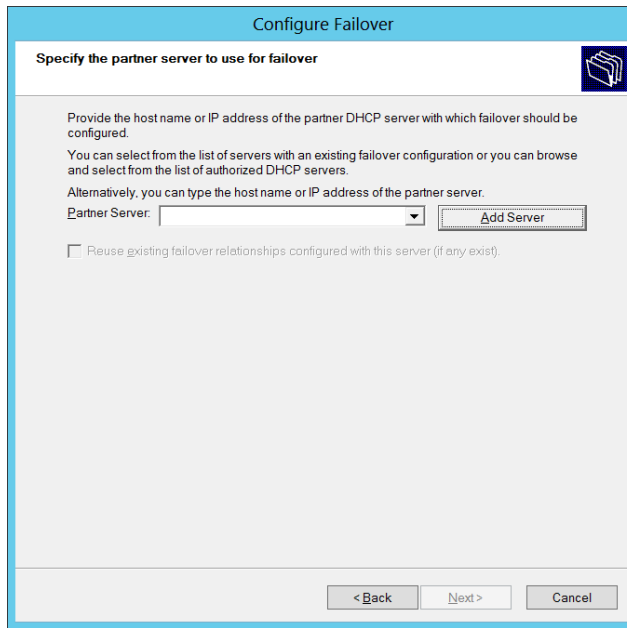
2. Go to DHCP console → In left pane, expand Server name → Expand IPv4 → right click Scope → select **Configure Failover**



3. In Introduction to DHCP Failover wizard, click **Next**.

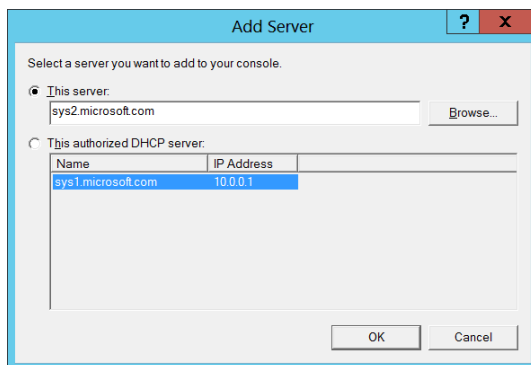


4. Click **Add Server** to add the Failover Server.



The 'Configure Failover' dialog box has a title bar with the text 'Configure Failover' and a help icon. The main area is titled 'Specify the partner server to use for failover'. It contains instructions: 'Provide the host name or IP address of the partner DHCP server with which failover should be configured. You can select from the list of servers with an existing failover configuration or you can browse and select from the list of authorized DHCP servers. Alternatively, you can type the host name or IP address of the partner server.' Below this is a 'Partner Server:' label followed by a text box containing 'sys2.microsoft.com' and an 'Add Server' button. A checkbox labeled 'Reuse existing failover relationships configured with this server (if any exist)' is unchecked. At the bottom are '< Back', 'Next >', and 'Cancel' buttons.

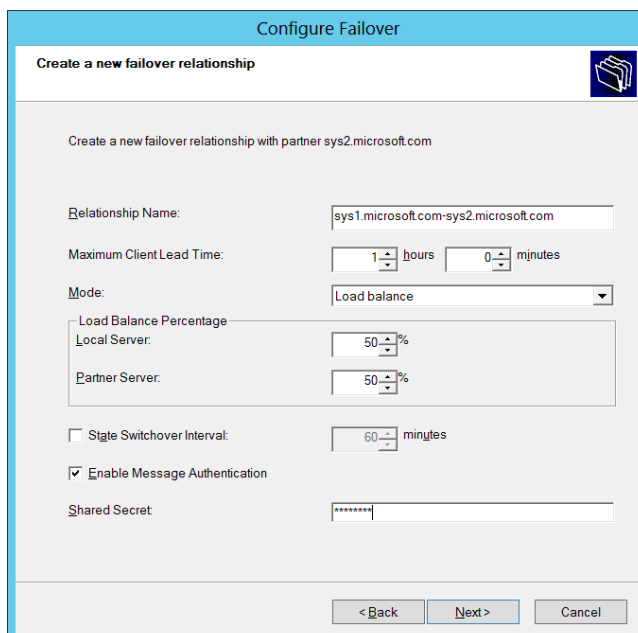
5. In Add Server, Browse and Select the server (**sys2.microsoft.com**), click **OK**.



The 'Add Server' dialog box has a title bar with the text 'Add Server' and help and close icons. The main area is titled 'Select a server you want to add to your console.' It has two radio buttons: 'This server:' (selected) and 'This authorized DHCP server:'. The 'This server:' section has a text box with 'sys2.microsoft.com' and a 'Browse...' button. The 'This authorized DHCP server:' section has a table with two columns: 'Name' and 'IP Address'. The table contains one row: 'sys1.microsoft.com' and '10.0.0.1'. At the bottom are 'OK' and 'Cancel' buttons.

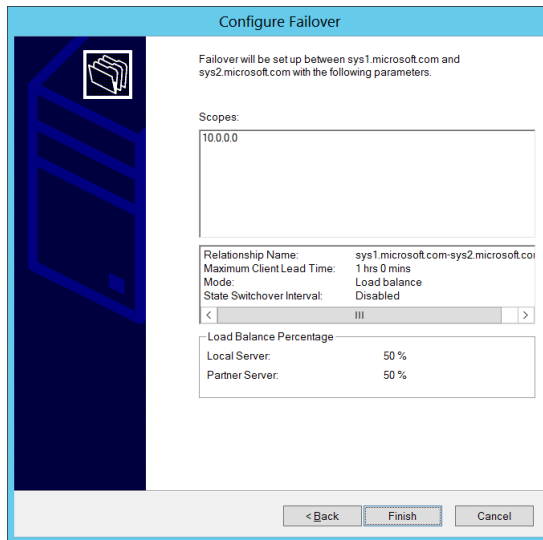
Name	IP Address
sys1.microsoft.com	10.0.0.1

6. Select the Mode, **Enable Message Authentication** and enter Shared Secret, **Next**.

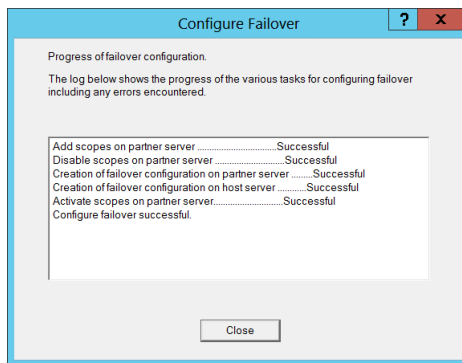


The 'Configure Failover' dialog box has a title bar with the text 'Configure Failover' and a help icon. The main area is titled 'Create a new failover relationship'. It contains the text 'Create a new failover relationship with partner sys2.microsoft.com'. Below this are several fields: 'Relationship Name:' with a text box containing 'sys1.microsoft.com-sys2.microsoft.com'; 'Maximum Client Lead Time:' with a spinner for '1' hours and '0' minutes; 'Mode:' with a dropdown menu set to 'Load balance'; 'Load Balance Percentage' section with 'Local Server:' and 'Partner Server:' spinners both set to '50%'; 'State Switchover Interval:' with a spinner set to '60' minutes; 'Enable Message Authentication' checkbox which is checked; and 'Shared Secret' with a masked text box. At the bottom are '< Back', 'Next >', and 'Cancel' buttons.

7. To Complete the Failover, click **Finish**.

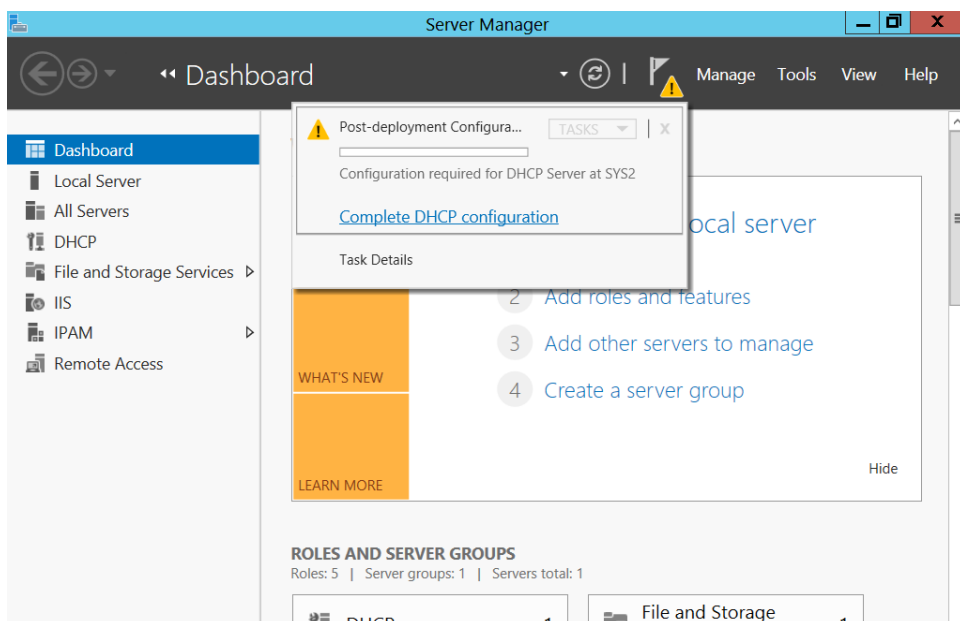


8. Verify the Summary to be **Successful**.

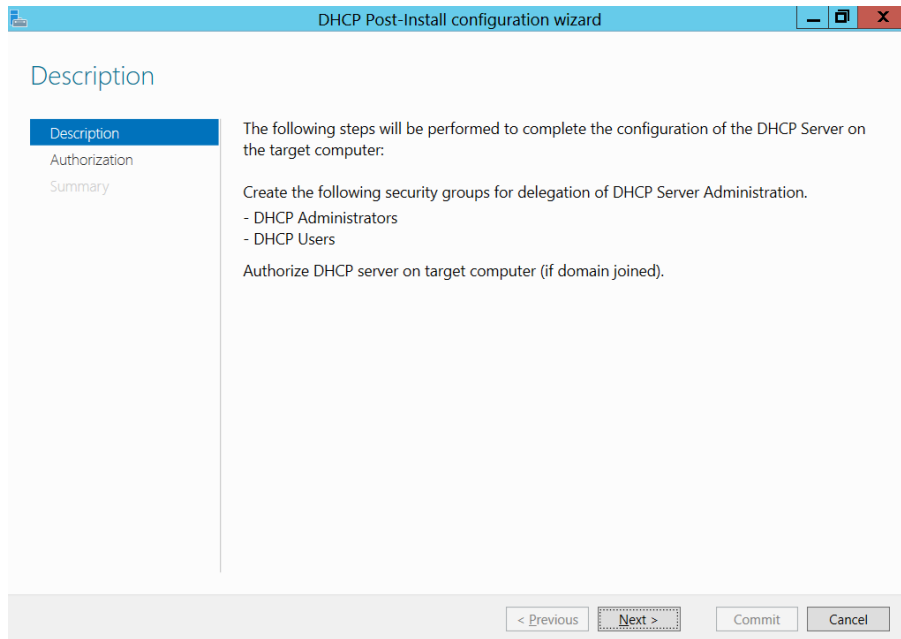


SYS2 - CONFIGURATION

1. Go to Server Manager Dashboard, select notification flag, **Complete DHCP Configuration**.



2. In DHCP Post-Install configuration wizard, click **Next**.



The screenshot shows the 'Description' step of the DHCP Post-Install configuration wizard. The window title is 'DHCP Post-Install configuration wizard'. On the left, there is a sidebar with three items: 'Description' (selected), 'Authorization', and 'Summary'. The main area contains the following text:

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

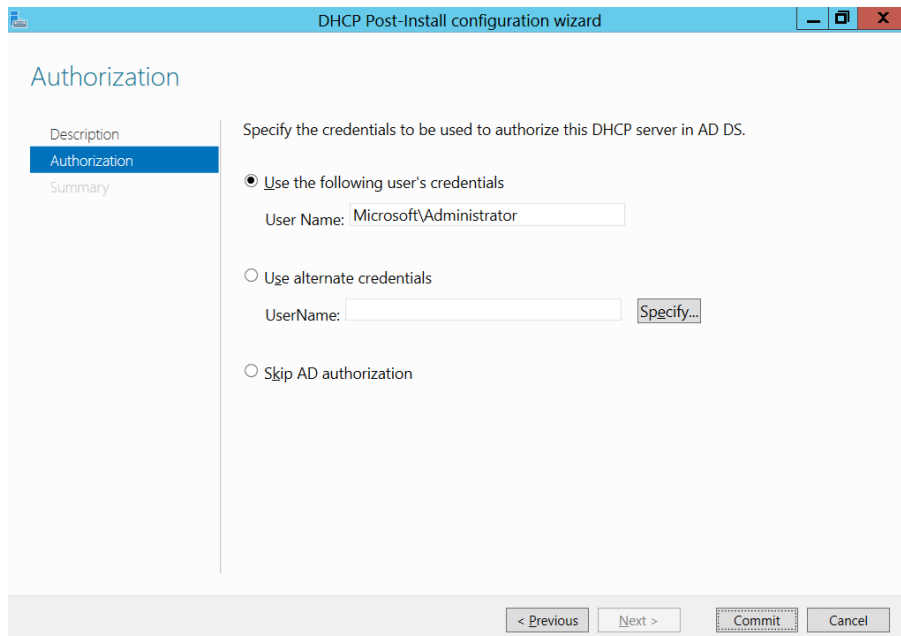
Create the following security groups for delegation of DHCP Server Administration.

- DHCP Administrators
- DHCP Users

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

At the bottom, there are four buttons: '< Previous', 'Next >' (highlighted with a dashed border), 'Commit', and 'Cancel'.

3. Click **Commit**, to Authorize the DHCP server **sys2.microsoft.com**



The screenshot shows the 'Authorization' step of the DHCP Post-Install configuration wizard. The window title is 'DHCP Post-Install configuration wizard'. On the left, there is a sidebar with three items: 'Description', 'Authorization' (selected), and 'Summary'. The main area contains the following text:

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

☒ Use the following user's credentials

User Name:

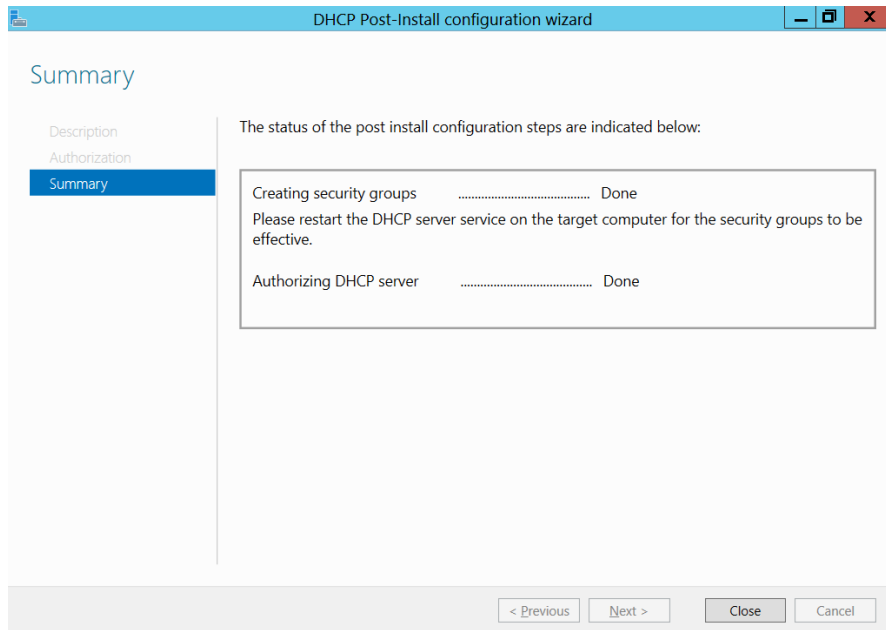
☐ Use alternate credentials

UserName:

☐ Skip AD authorization

At the bottom, there are four buttons: '< Previous', 'Next >', 'Commit' (highlighted with a dashed border), and 'Cancel'.

4. Verify the summary and click **Close**.



Verification:

1. Go to DHCP console and verify the scope replicated from sys1

