

# Setting Up a DHCP Server

April 29, 2010

# What Does a DHCP Server Do?

A Dynamic Host Configuration Protocol (DHCP) Server provides any client that connects to this network with an IP address, gateway and DNS resolution.

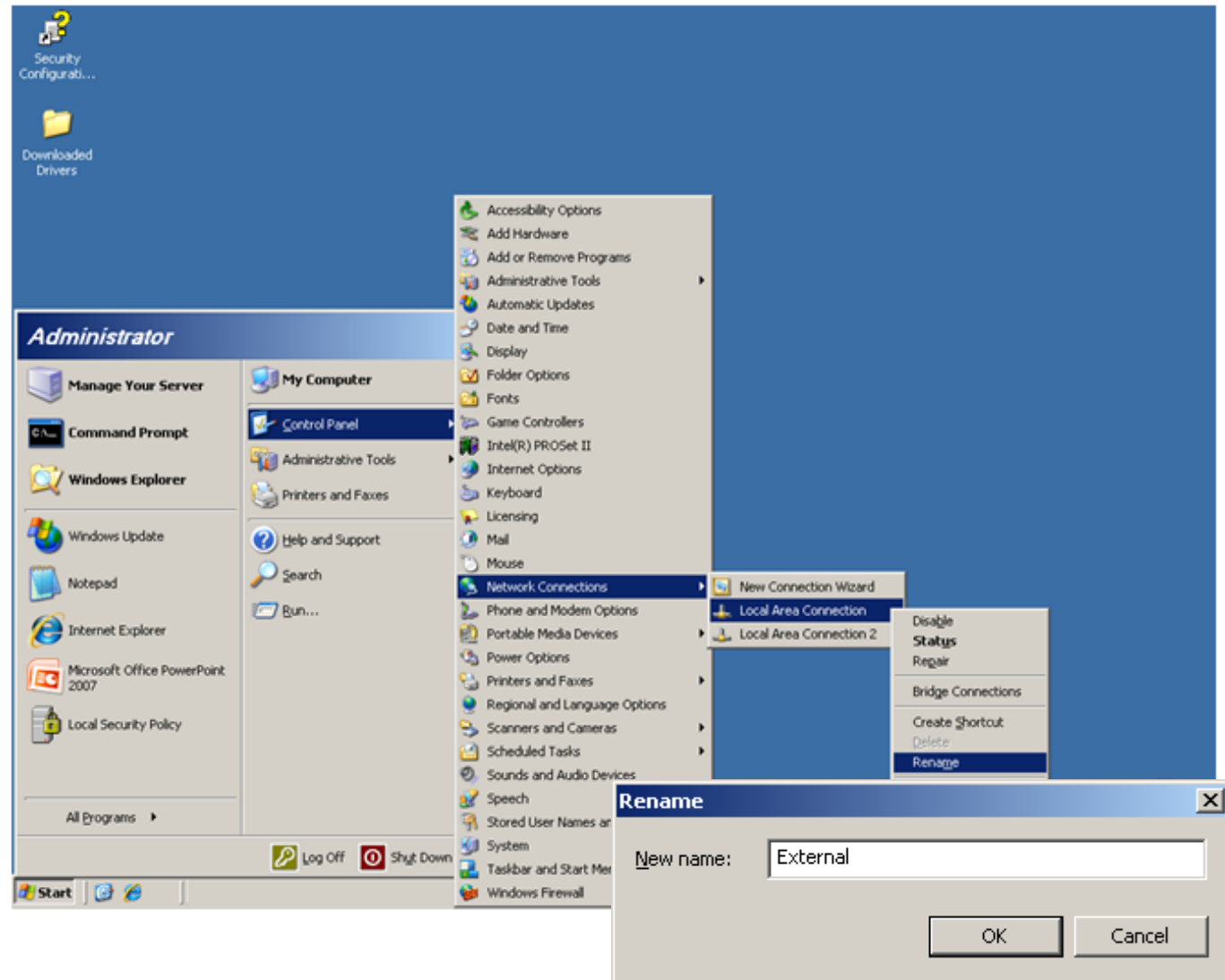
The client's Network Interface Card (NIC) is set to dynamically accept the TCP/IP address given to it by the DHCP Server.



# Naming the External NIC

On the server, we should give the NICs identifiers that will allow us to quickly determine what they control just by reading. The card that connects the server to the outside networks can be called such names as external, Internet or outside.

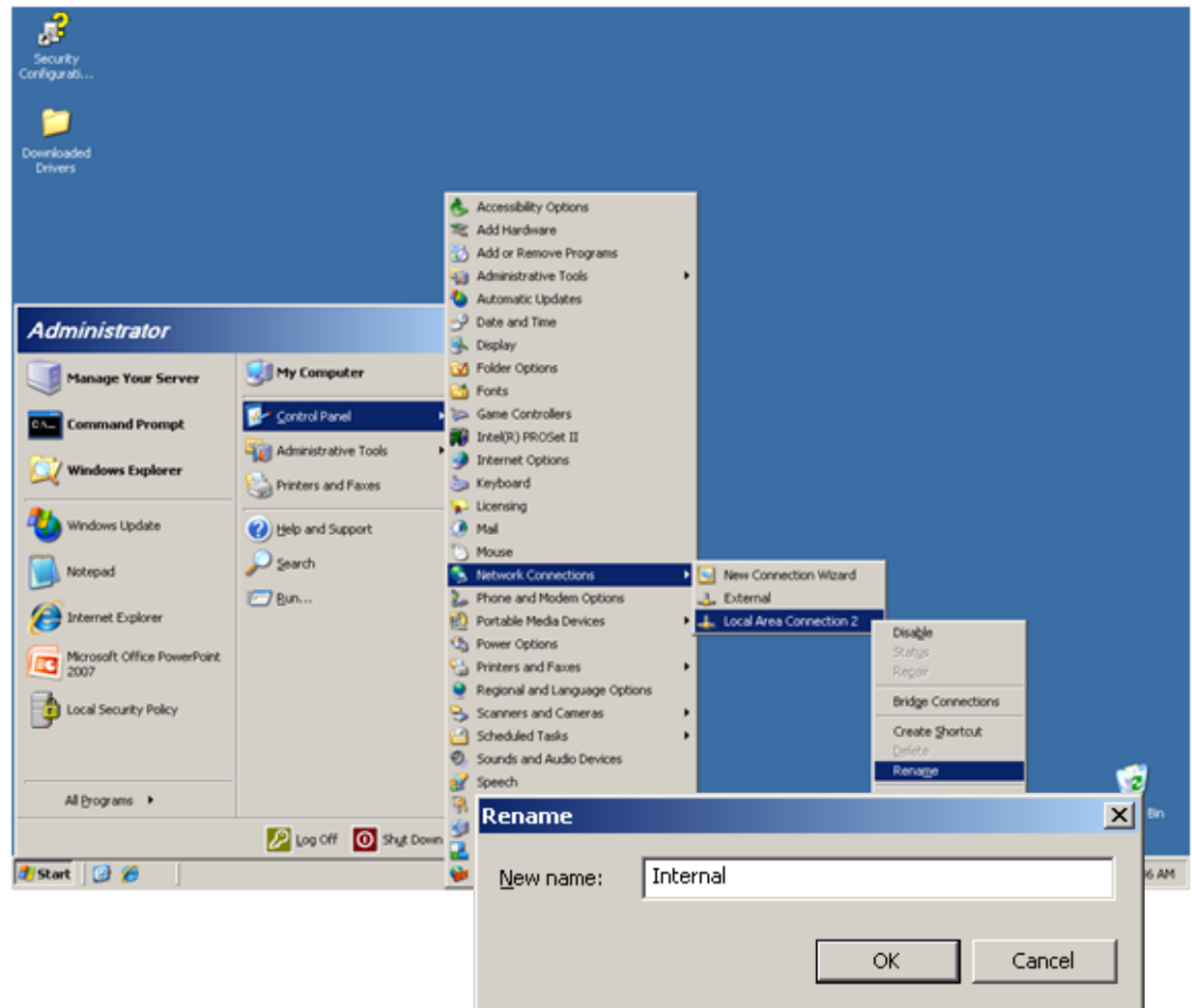
To make the name alteration, we enter the Control Panel and then Network Connections. Select the Local Area Connection that joins to the Internet and right click on the name. When the submenu pops up, we select rename and type External in the new name textbox. We press the OK button to accept the change.



# Naming the Internal NIC

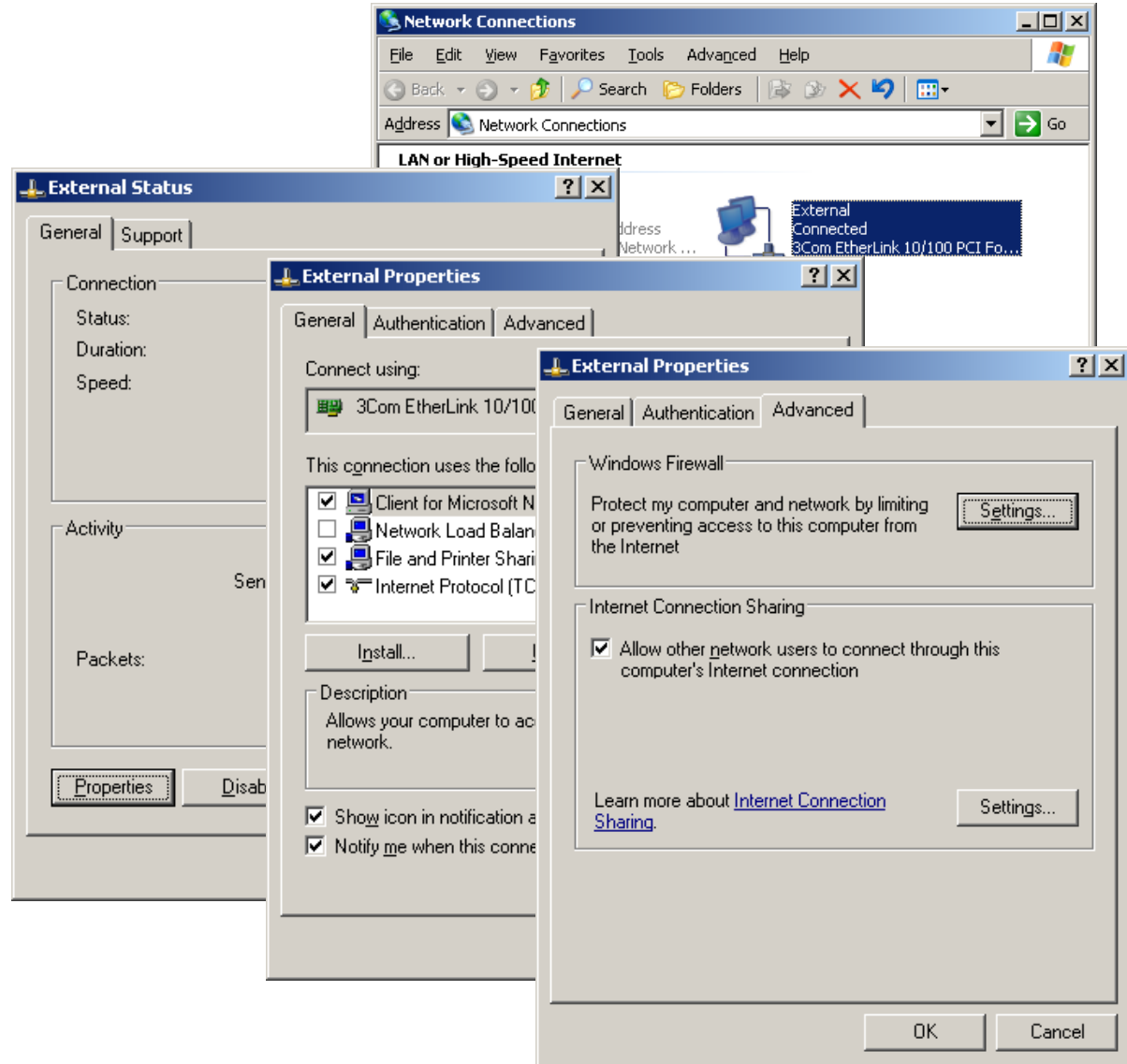
The card that connects the server to the inside networks can be called such names as internal, Intranet or inside.

To make the name alteration, we enter the Control Panel and then Network Connections. Select the Local Area Connection 2 that joins to the Local Area Network (LAN) and right click on the name. When the submenu pops up, we select rename and type Internal in the new name textbox. We press the OK button to accept the change.



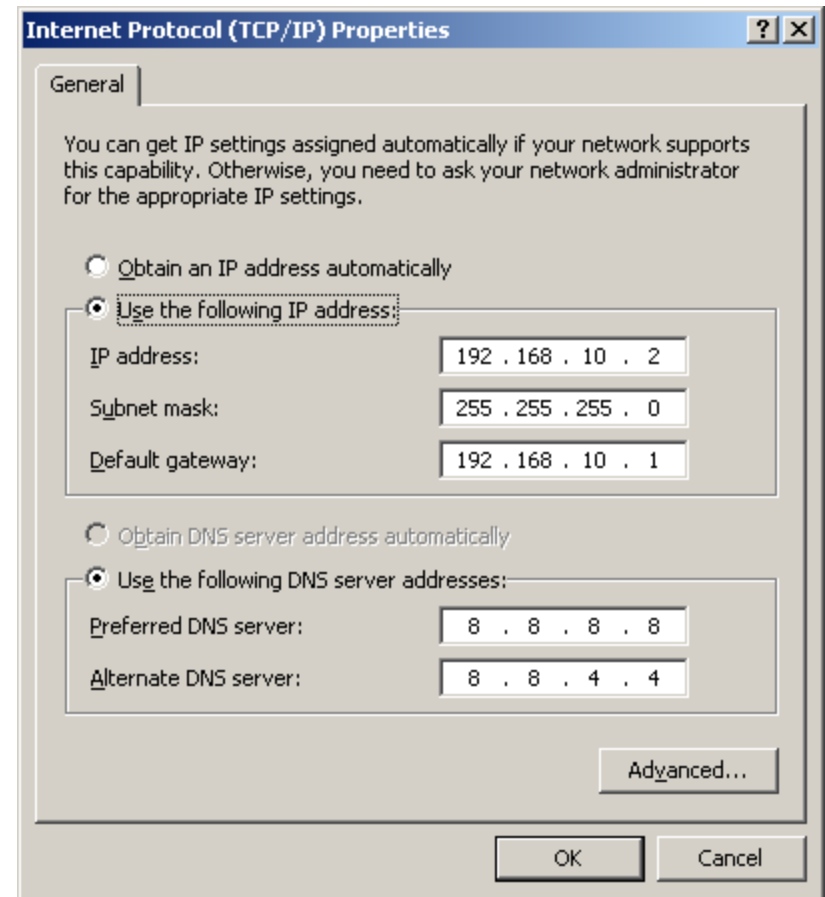
# The External NIC

Now, we go to the Network Connection window and select the External NIC. The External NIC Status window will open and we will select the Properties button. At the External Properties window, we choose the Advanced tab on the top right of the dialogue box. At this time, we can see the Internet Connection Sharing checkbox. We will place a check in the box.



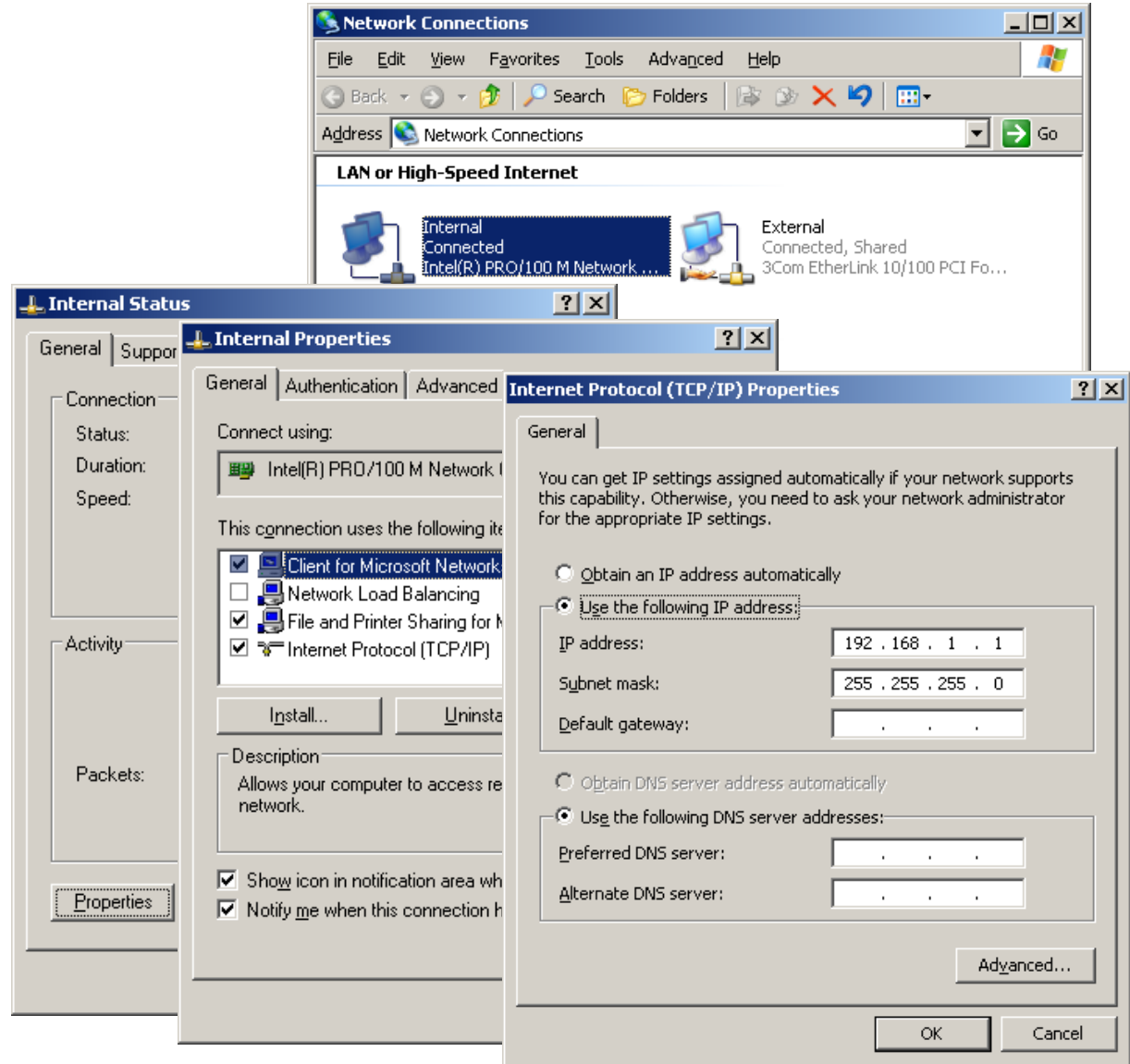
# The External NIC TCP/IP Settings

The computer will tell us that the IP address 192.168.0.1 will be used for our system. We will continue to utilize the external IP address scheme, gateway IP and DNS IP addresses that we previously had installed on the External network interface card.



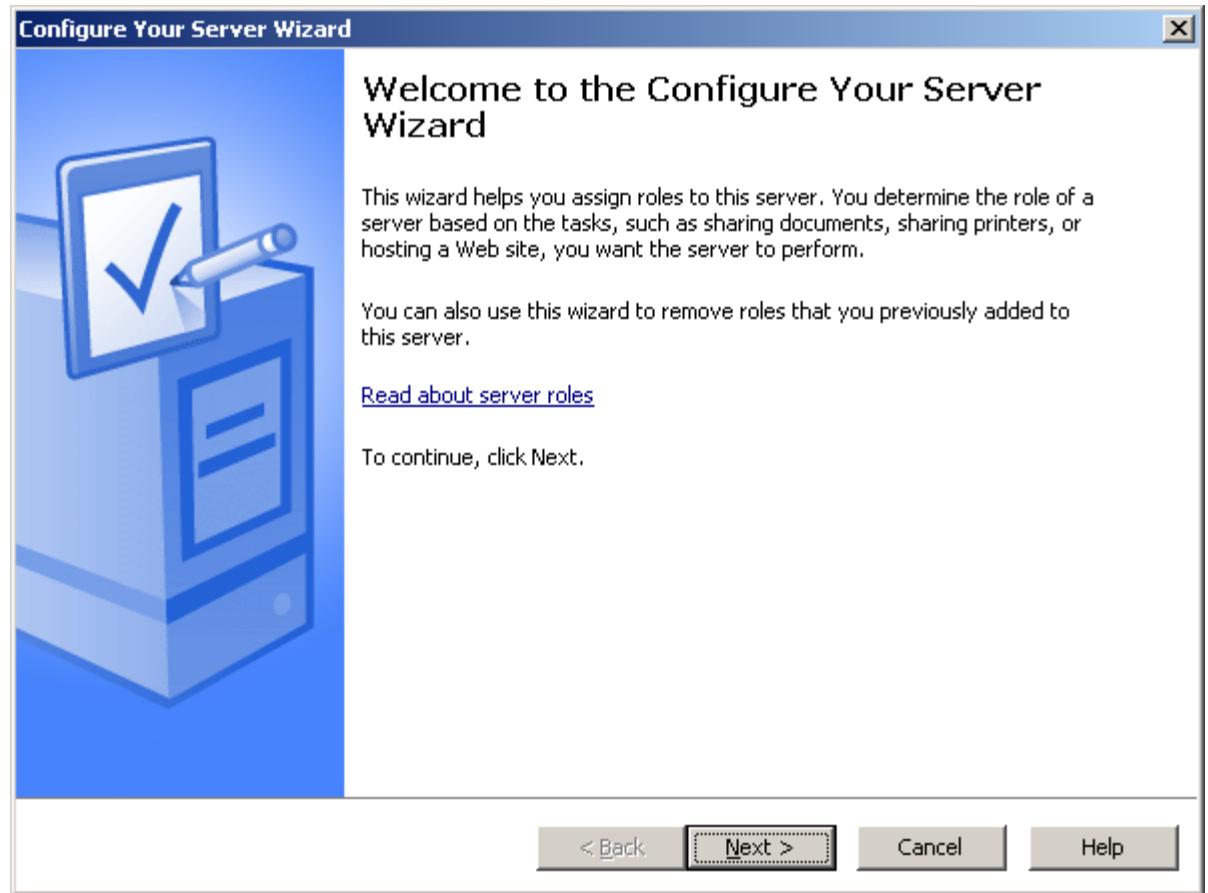
# The Internal NIC

Now, we will setup the Internal network interface card. We double click on the Internal card and the Internal NIC Status window will open and we will select the Properties button. At the Internal Properties window, we double click on the TCP/IP Internet Protocol. We can type our own IP address scheme in for the Intranet IP of 192.168.1.1. The subnet mask will be 255.255.255.0. We leave the gateway and DNS IP addresses blank.



# Configure the Server Wizard

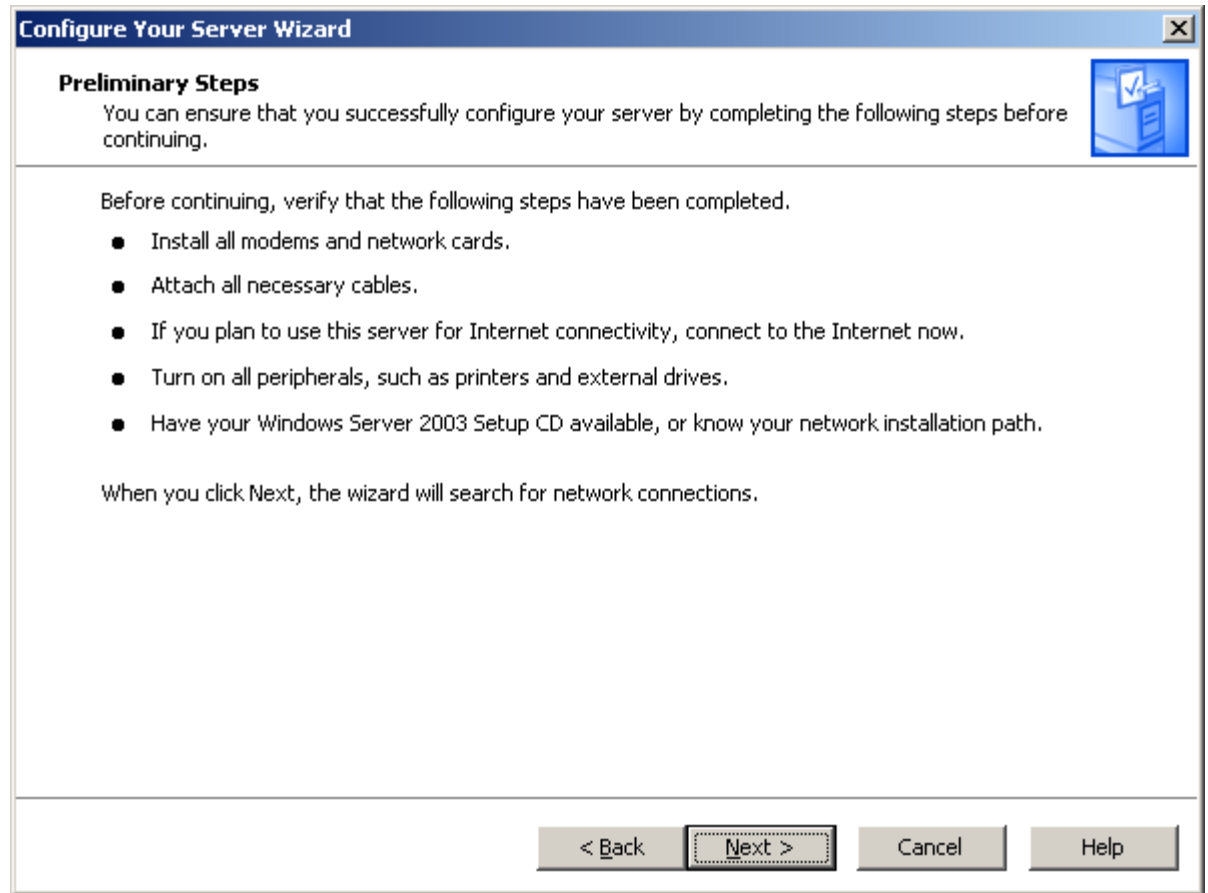
Now to setup the DHCP server, we choose the Configure Your Server Wizard . The first window in the procedure will appear on the graphical display and we select the Next command button to continue.





# Preliminary Steps

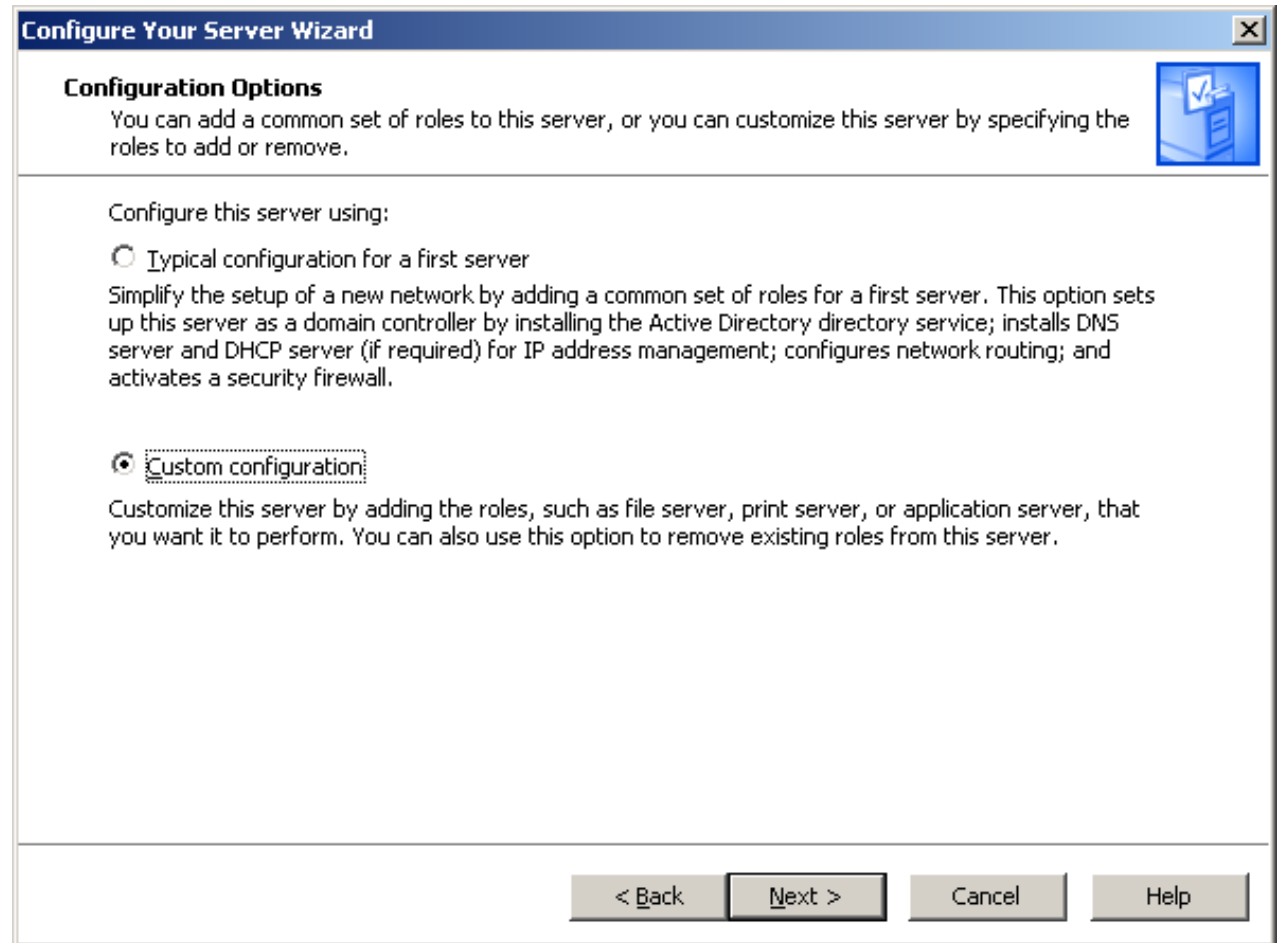
We are prompted to have the Windows Server CD available to load extra files and to have the necessary Network Interface Cards, cables and Internet connections to complete the task. When we are ready, we should press the Next command button.



# Configure your Server Wizard

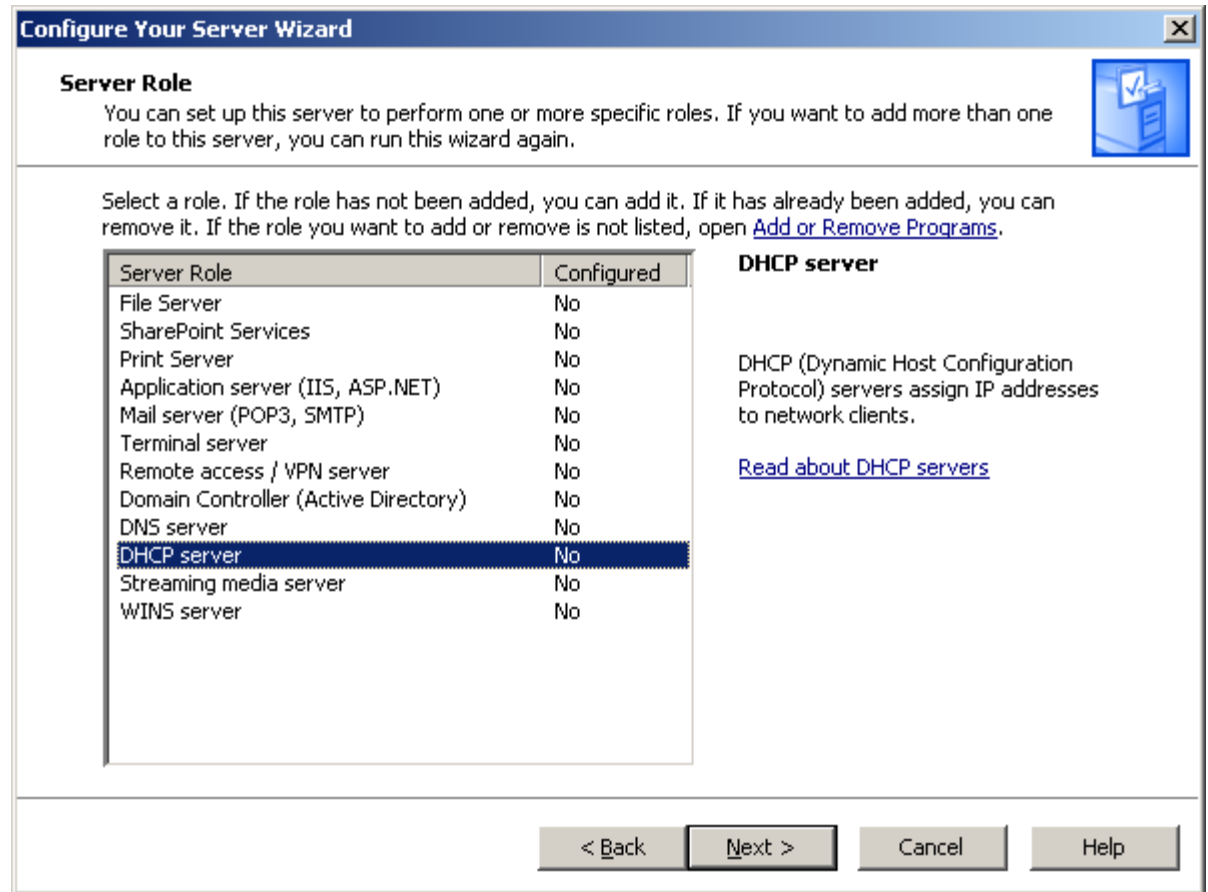
In most cases, we will choose a custom configuration. A typical configuration will have us install Active Directory (domain controller), DNS role, DHCP role and activate a security firewall.

We will opt for custom configuration and select the Next button.



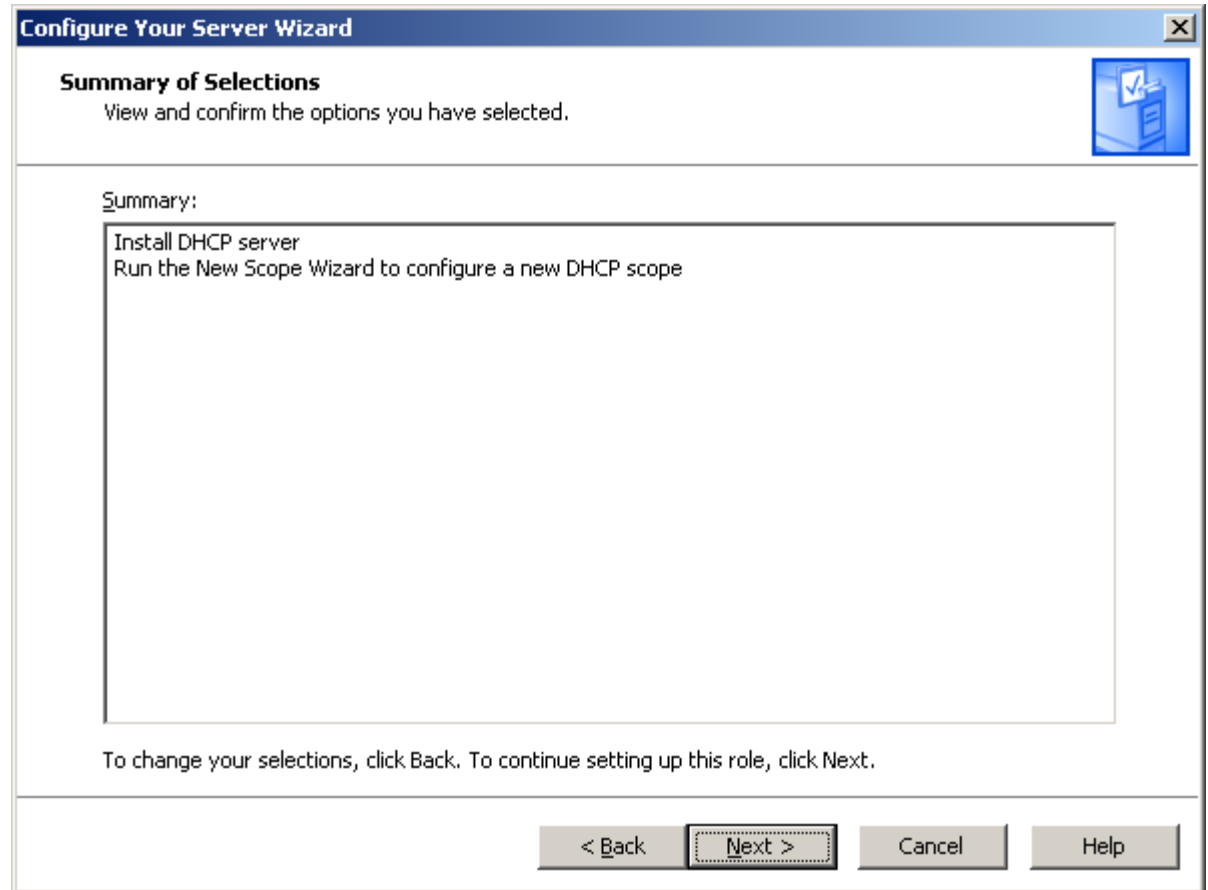
# Select DHCP Server

We will pick the DHCP Server function and we then push the Next button.



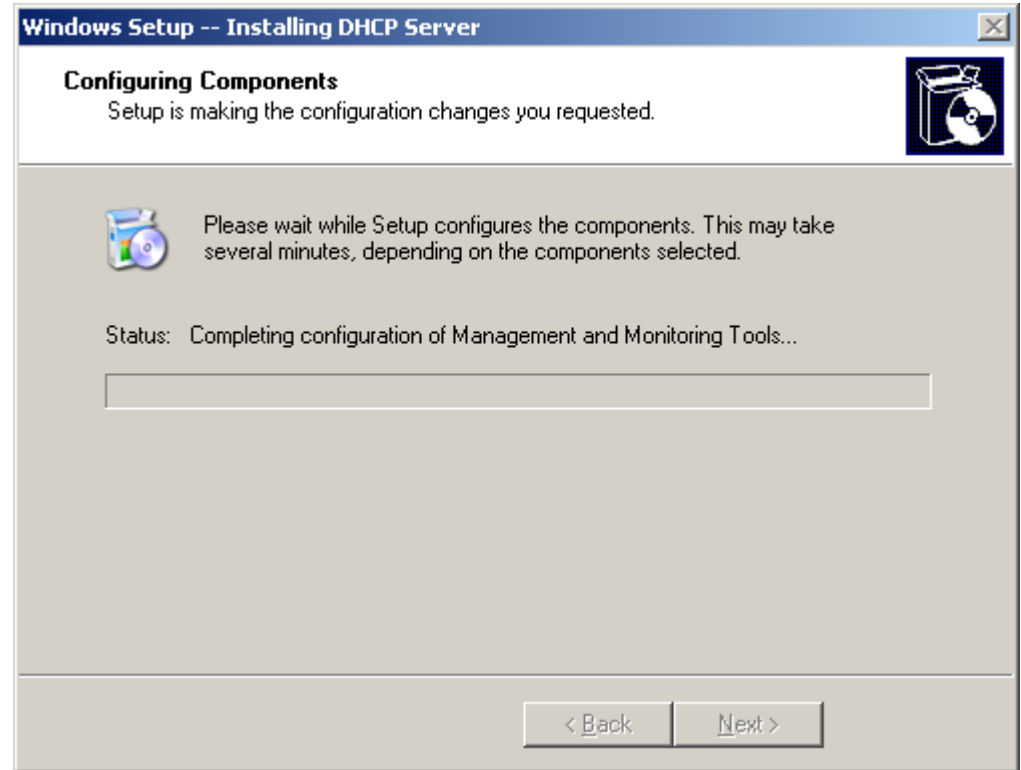
# Install DHCP Server and New Scope

Next, a window shows the summary of selections. We go for the Next button to continue.



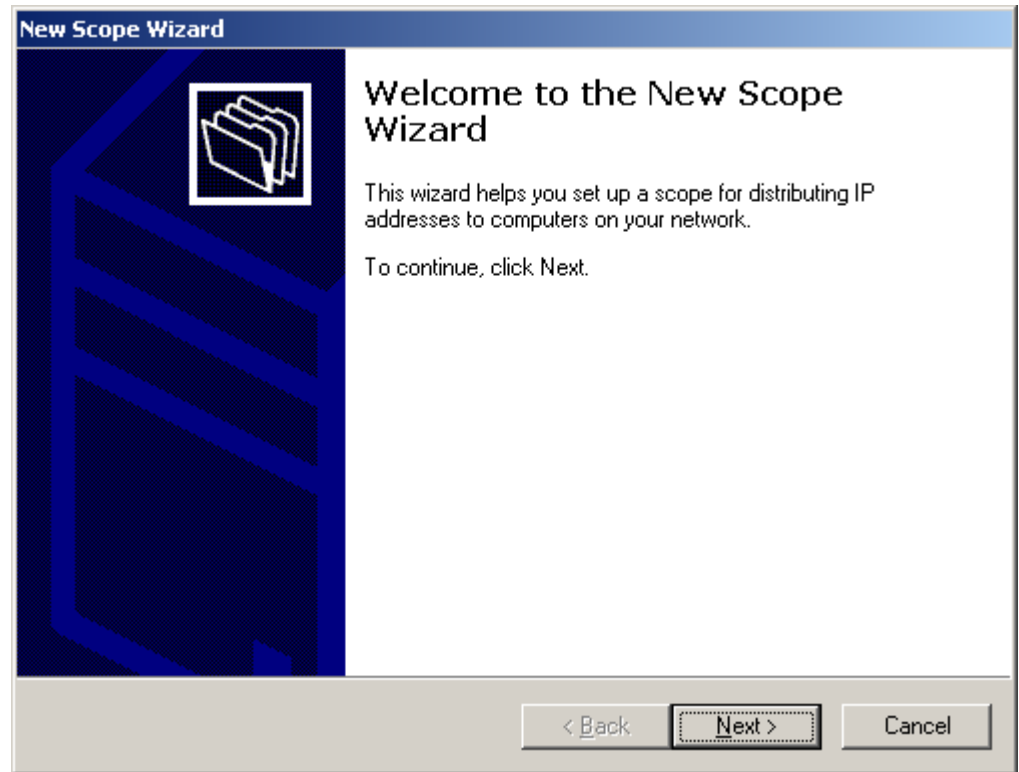
# Configuring Components

Now, the wizard will configure components.



# The New Scope Wizard

The next step is to create a scope. We pick the Next button to go on.



# Scope Name

We made the Scope name BITS66\_LAN and the description is Managers LAN. Then we press Next to carry on.

**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:

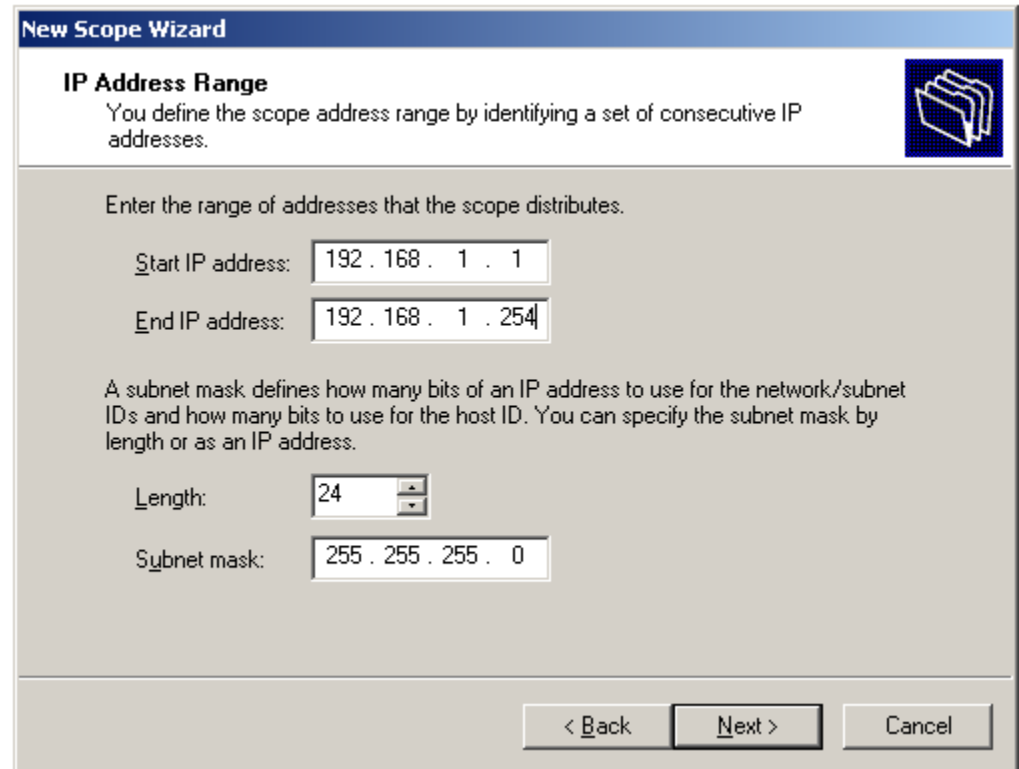
Description:

< Back   Next >   Cancel

# IP Address Range

We will make the IP address range 192.168.0.1 to 192.162.0.254. The length of the subnet mask is 24 bits and the mask is 255.255.255.0.

We press Next to advance.



The screenshot shows a Windows-style dialog box titled "New Scope Wizard". The main heading is "IP Address Range" with a sub-instruction: "You define the scope address range by identifying a set of consecutive IP addresses." Below this, there is a text prompt: "Enter the range of addresses that the scope distributes." The form contains the following fields:

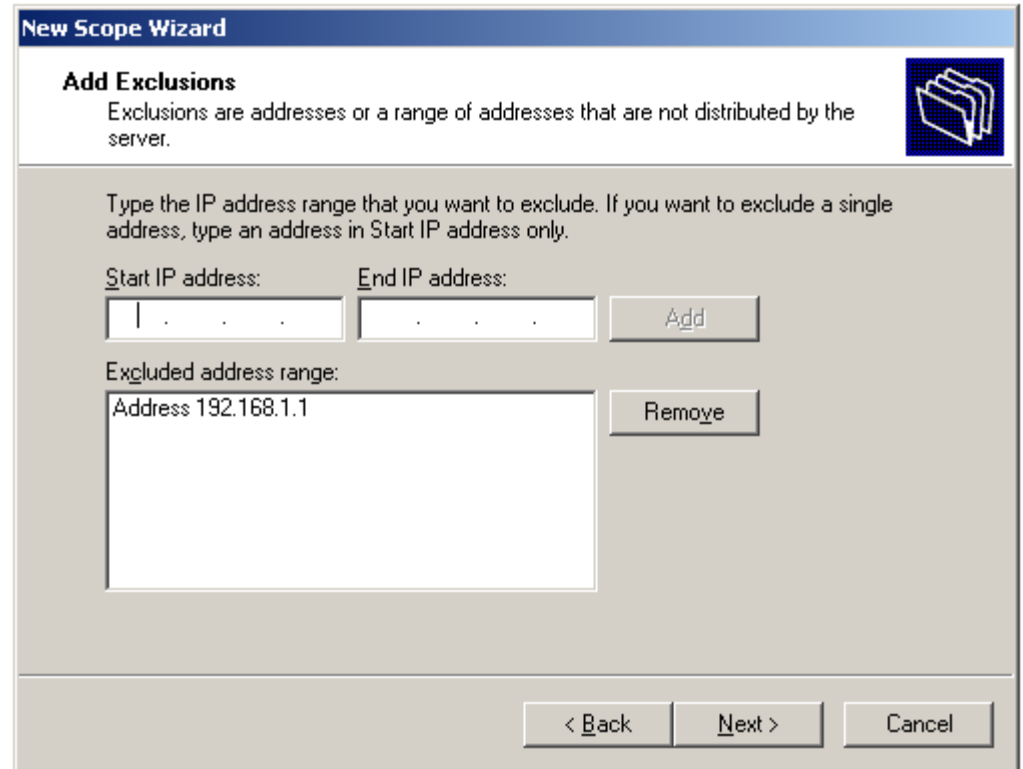
- "Start IP address:" with a text box containing "192 . 168 . 1 . 1".
- "End IP address:" with a text box containing "192 . 168 . 1 . 254".
- "Length:" with a spin box set to "24".
- "Subnet mask:" with a text box containing "255 . 255 . 255 . 0".

At the bottom right, there are three buttons: "< Back", "Next >", and "Cancel".



# Exclusions

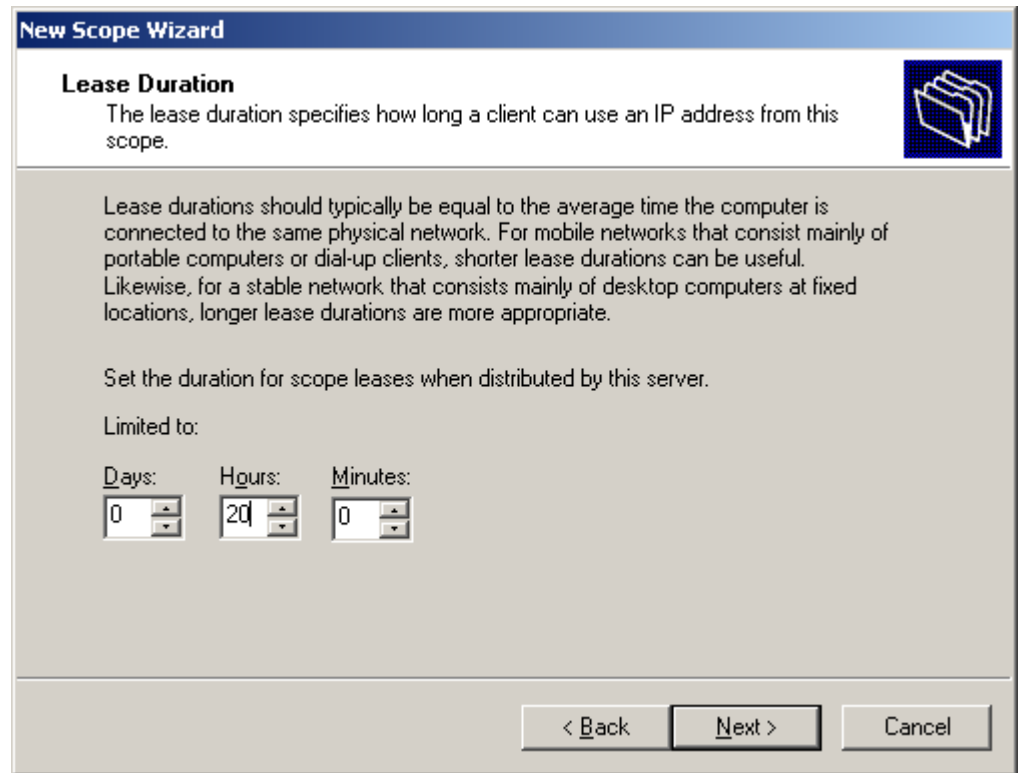
We will exclude the server's IP address and any other static IP devices. In this example, we excluded the server Internal Network Interface Card. Other devices that can be excluded are network printers, scanners and routers.



The screenshot shows a 'New Scope Wizard' dialog box with a blue title bar. The main area is titled 'Add Exclusions' and contains the following text: 'Exclusions are addresses or a range of addresses that are not distributed by the server.' Below this, it says: '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.' There are two input fields for 'Start IP address:' and 'End IP address:', each followed by an 'Add' button. Below these is a list box labeled 'Excluded address range:' containing the text 'Address 192.168.1.1' and a 'Remove' button. At the bottom of the dialog are three buttons: '< Back', 'Next >', and 'Cancel'.

# Lease Duration

The default duration is 8 days, but we will change the time for a computer to be continuously on the network to 20 hours. We then will choose the Next button and continue.



**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.

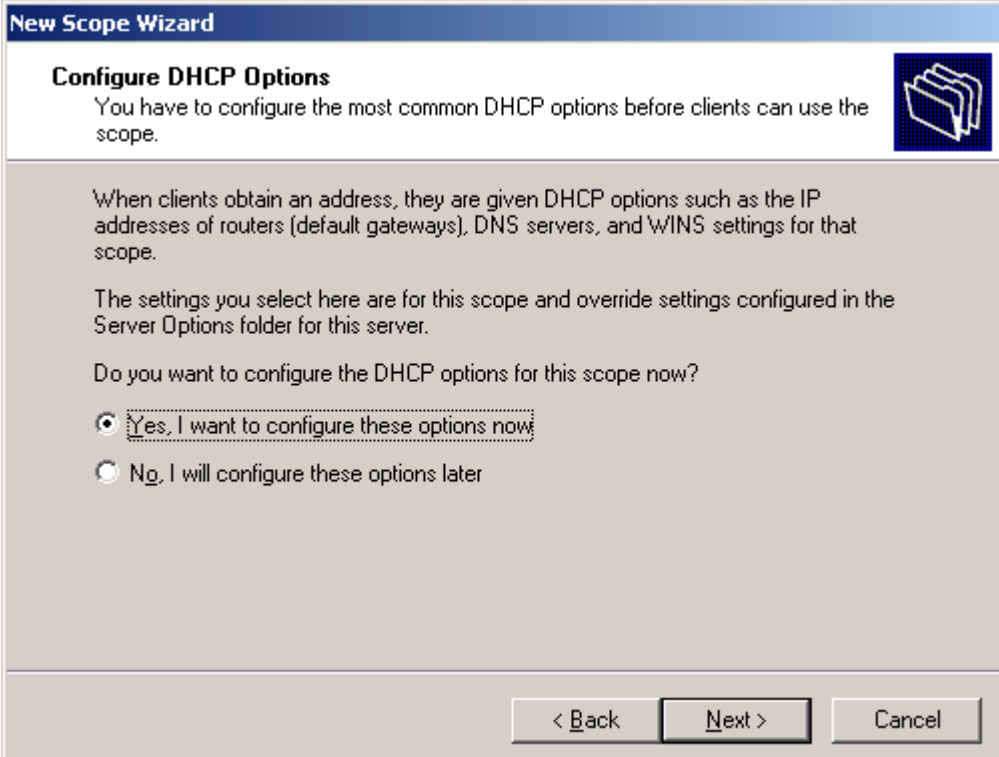
Limited to:

Days:	Hours:	Minutes:
<input type="text" value="0"/>	<input type="text" value="20"/>	<input type="text" value="0"/>

< Back    Next >    Cancel

# DHCP Options

Yes, we will want to set DHCP options and after that we will opt for the Next button to go onward.



**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?

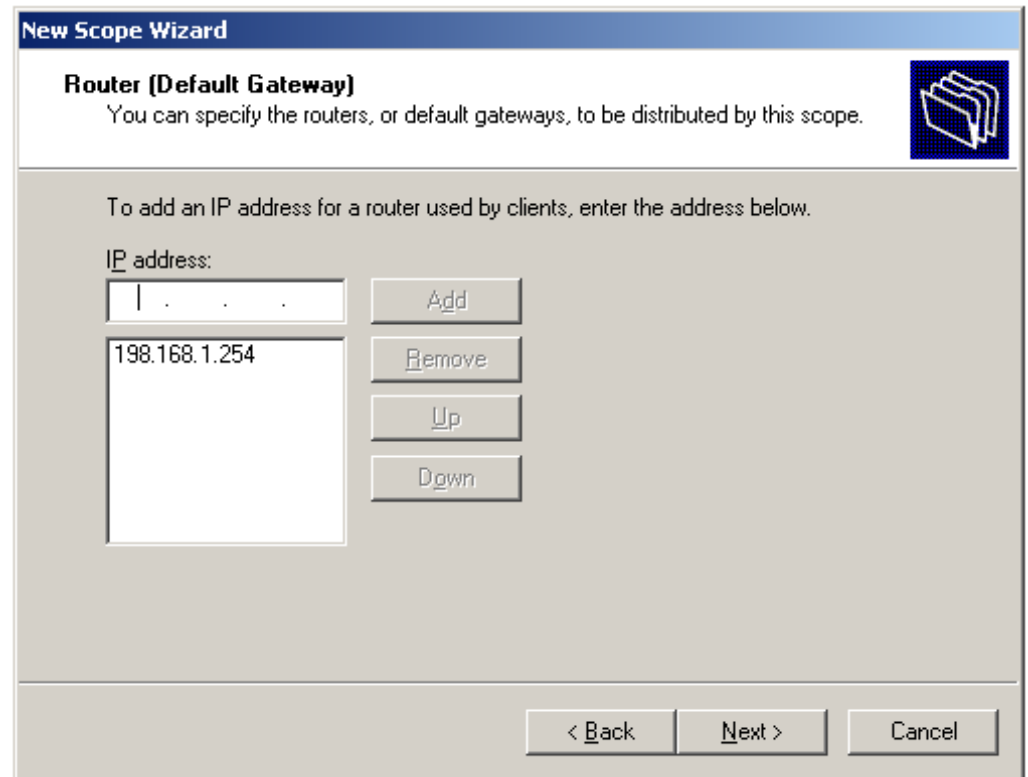
Yes, I want to configure these options now

No, I will configure these options later

< Back    Next >    Cancel

# Identify the Router

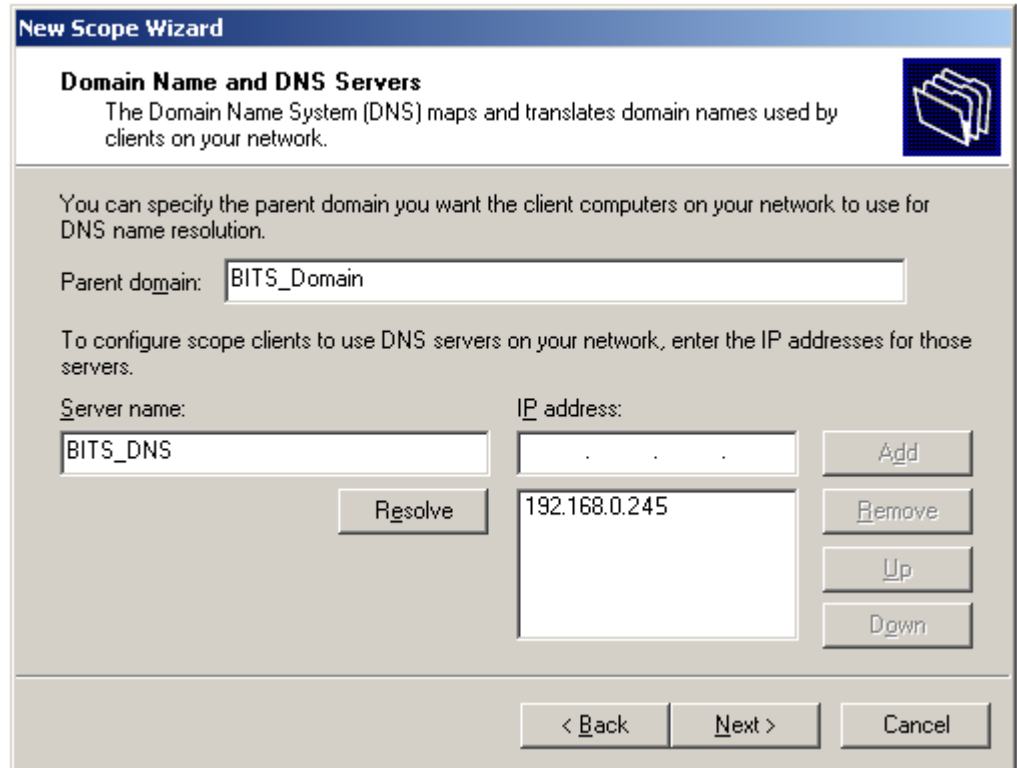
We can identify routers on the LAN by typing in their IP address and then we hit the Add button. We press the Next button to advance to another window.



The screenshot shows a window titled "New Scope Wizard" with a blue header bar. Below the header, the title "Router (Default Gateway)" is displayed in bold, followed by the instruction "You can specify the routers, or default gateways, to be distributed by this scope." To the right of this text is a blue icon of a folder with a document. Below this, the text "To add an IP address for a router used by clients, enter the address below." is shown. There is a label "IP address:" followed by a text input field containing "198.168.1.254". To the right of the input field are four buttons: "Add", "Remove", "Up", and "Down". At the bottom of the window, there are three buttons: "< Back", "Next >", and "Cancel".

# DNS Server

We can identify the Domain Name and DNS server for the scope. When we type in the server name, we can resolve the IP address by choosing the Resolve button. After placing the parent domain and DNS server in this window, we choose the Next button.



The screenshot shows the 'New Scope Wizard' window, specifically the 'Domain Name and DNS Servers' step. The window title is 'New Scope Wizard'. Below the title bar, the section is titled 'Domain Name and DNS Servers' with a sub-description: 'The Domain Name System (DNS) maps and translates domain names used by clients on your network.' There is a folder icon on the right side of this section. The main text reads: 'You can specify the parent domain you want the client computers on your network to use for DNS name resolution.' Below this, there is a text box for 'Parent domain:' containing 'BITS\_Domain'. Another instruction says: 'To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.' There are two columns of input fields: 'Server name:' and 'IP address:'. The 'Server name:' field contains 'BITS\_DNS'. Below it is a 'Resolve' button. The 'IP address:' field contains '192.168.0.245'. To the right of the IP address field are four buttons: 'Add', 'Remove', 'Up', and 'Down'. At the bottom of the window are three buttons: '< Back', 'Next >', and '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: BITS\_Domain

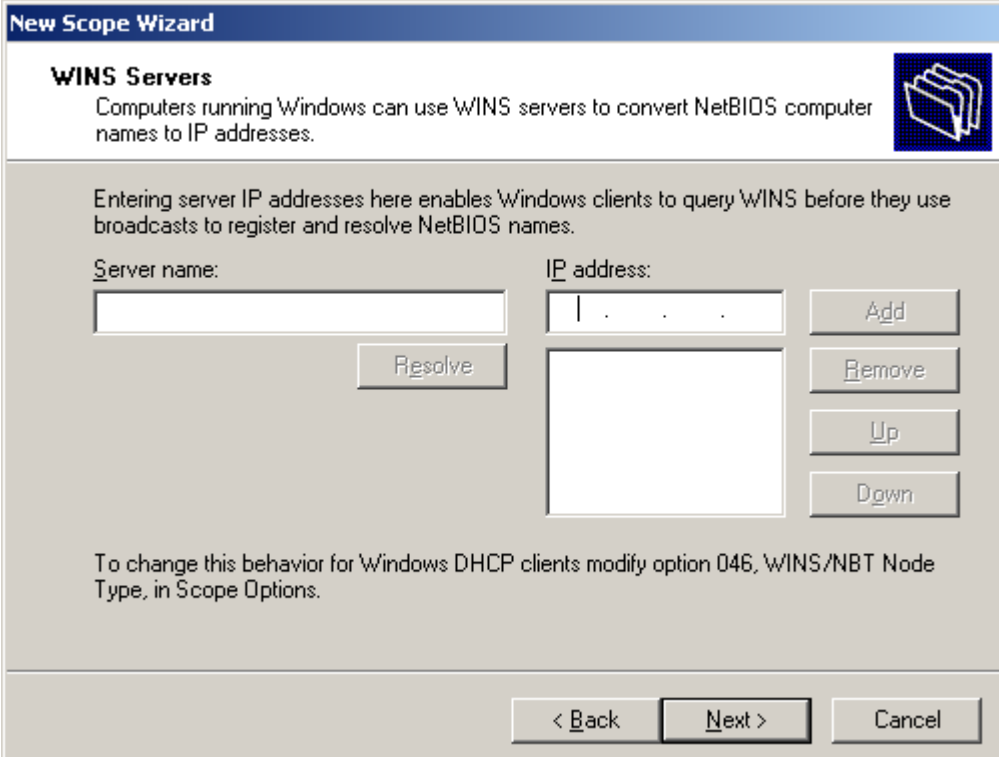
To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.

Server name:	IP address:
BITS_DNS	192.168.0.245

Buttons: Add, Remove, Up, Down, Resolve, < Back, Next >, Cancel

# WINS Server

We can also determine the WINS server on the LAN by typing the WINS server NetBIOS name and picking the Resolve button. Then, we can choose the Next button to continue.



The screenshot shows the 'New Scope Wizard' dialog box, specifically the 'WINS Servers' step. The title bar reads 'New Scope Wizard'. Below the title bar, the section is titled 'WINS Servers' with a sub-header 'WINS Servers' and a description: 'Computers running Windows can use WINS servers to convert NetBIOS computer names to IP addresses.' To the right of this text is a folder icon. Below the description, there is a paragraph: 'Entering server IP addresses here enables Windows clients to query WINS before they use broadcasts to register and resolve NetBIOS names.' The main area contains two input fields: 'Server name:' and 'IP address:'. The 'Server name' field is empty, and the 'IP address' field contains '1 . . .'. To the right of the 'IP address' field are four buttons: 'Add', 'Remove', 'Up', and 'Down'. Below these fields is a 'Resolve' button. At the bottom of the dialog, there is a paragraph: 'To change this behavior for Windows DHCP clients modify option 046, WINS/NBT Node Type, in Scope Options.' At the very bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

**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

# Finish the New Scope Wizard

We can activate the new scope by opting the yes radial button. We press the Next button to go on.

**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 is Complete

The wizard is now complete and we pick the Finish button.





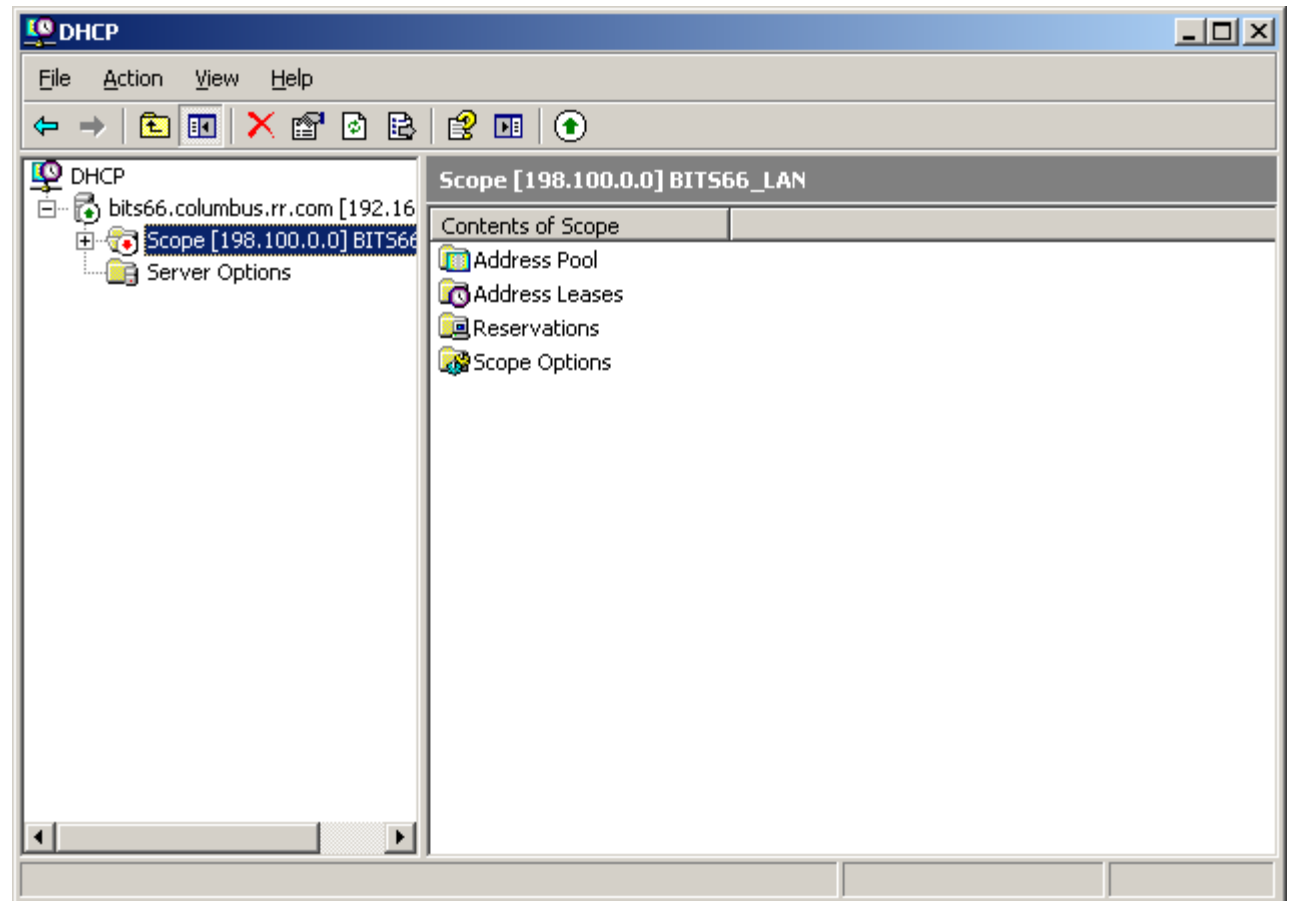
# DHCP Server is Complete

Our server has DHCP capabilities. We press the Finish button.



# DHCP Server Inactive

We see the DHCP is not active, so we double click on the new scope to activate it.



# Activate the DHCP Server

We can use the DHCP console to make changes to the address pool, to check the lease, and to make alterations to the scope. We can also add new scopes in this console.

