



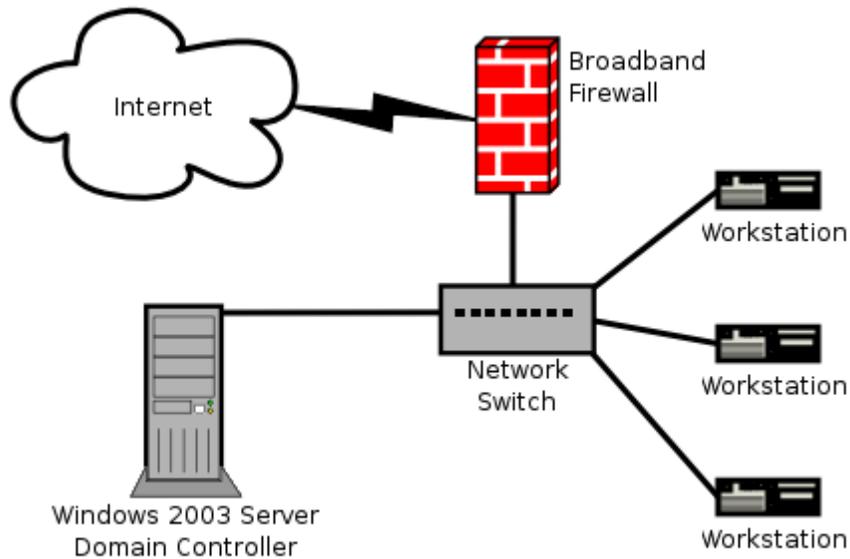
Configuring Windows Server 2003 for a Small Business Network, Part 2

Written by Cortex
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Welcome to Part 2 of the "Configuring Windows Server 2003 for a Small Business Network" series. If you've conquered **Part 1**, then you should have an essentially useless, but ready-to-be-configured, Windows Server 2003 installation. Now it's time to teach it some tricks! Part 2 will help you get Active Directory installed and configured. Along with that, we'll set up DNS, DHCP, and WINS to help everything in the network get on the same page, so to speak.

By the end of this article series, we'll have a network like **Figure 1-1**.

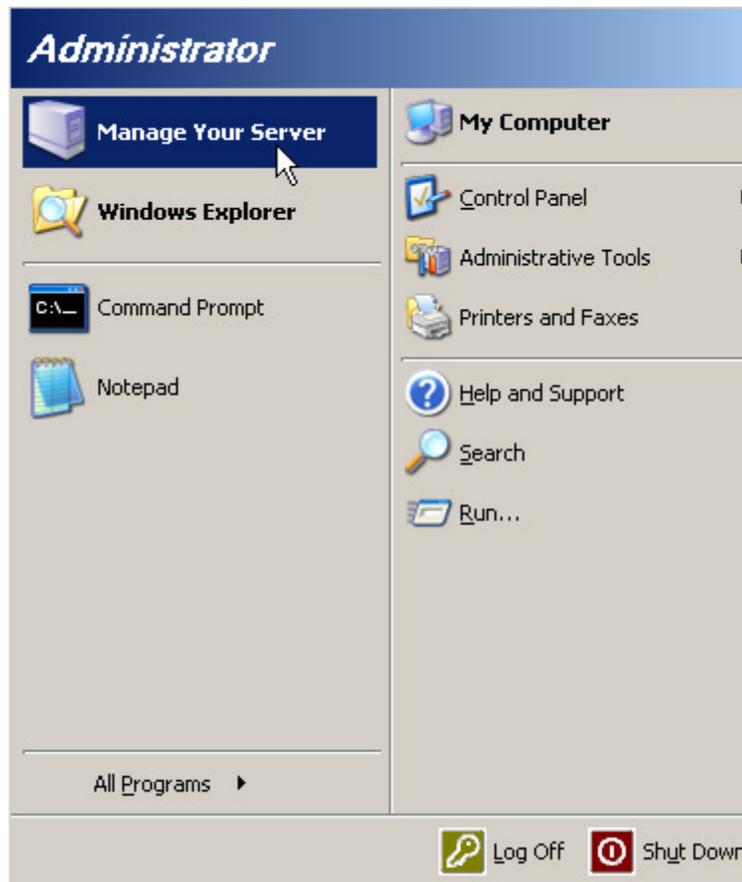
Figure 1-1



When we finish Part 2, our server will be ready to have workstations join the domain and start sharing files. Now here we go!

Step 1:
Click the "Start" button, and choose "Manage Your Server" shown in **Figure 1-2**.

Figure 1-2



You will probably see a "Windows Security Alert" pop-up similar to **Figure 1-3**. Windows firewall keeps track of programs trying to open network connections. The "Configure Your Server Wizard" should be safe to allow, so click "Unblock."

Figure 1-3



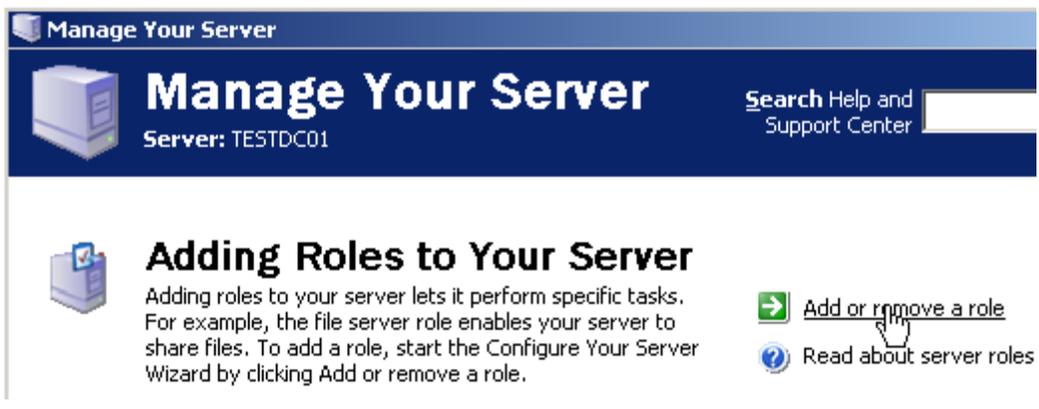
Step 2:

Now you are presented with the "Manage Your Server" window. Using this handy program, you can configure your server to do many different things. The first of which will be setting up Active Directory. From this screen, shown in **Figure 1-4**, click "Add or remove a role" so we can add the Domain Controller role.

Windows Server 2003 improved on the security of its predecessors by not enabling any services out of the box. If you

only enable services you need, you don't have any potential "backdoors" into your system unknown to you. "Adding roles" to a Windows Server 2003 essentially just enables services for network clients.

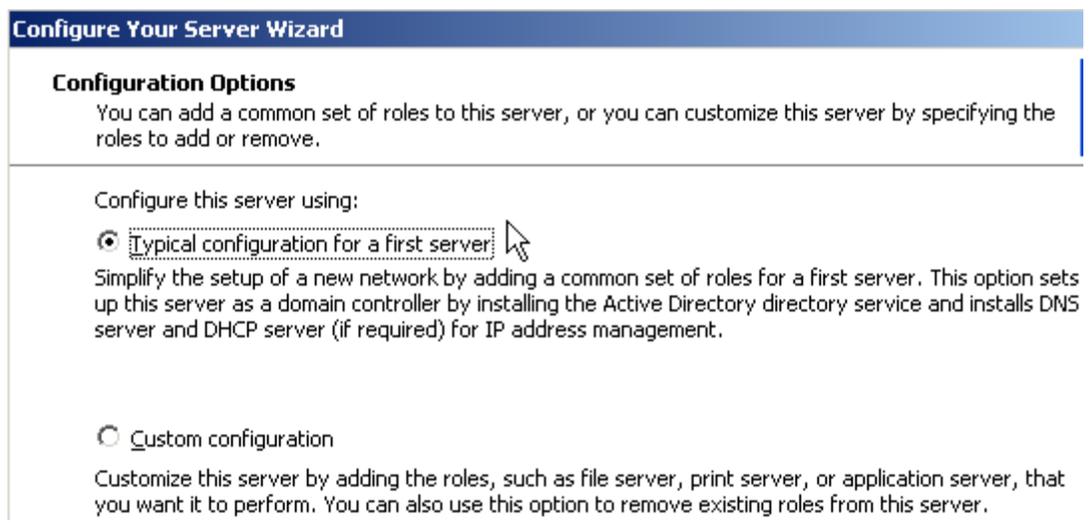
Figure 1-4



Step 3:

Next, the "Configure Your Server Wizard" presents two options: "Typical configuration for a first server" or "Custom Configuration." Since this is our first server, we will choose the first option, as shown in Figure 1-5.

Figure 1-5



Now we choose a domain name for our Active Directory tree. A little planning here will definitely pay off later. If you have a domain name for your company now, that's great. You have the option of using your own domain name here. The directions on the screen recommend keeping your domain separate, but I have never had a problem keeping them separate. I will tell you how to do that in later articles when it becomes necessary. Ok, if you don't want to use your own domain name here, you can choose whatever name you want and put .local on the end of it. I recommend keeping it lowercase and less than 15 characters (not including the .local part). I've used testdomain.local in Figure 1-6. If you have any questions about this step, ask in the forums. So enter your domain name and click "Next".

Figure 1-6

Configure Your Server Wizard

Active Directory Domain Name
An Active Directory domain is identified by a DNS name.

Type the full DNS name for the new domain.

Active Directory domain name:

Example of a full DNS name: smallbusiness.local

By using the extension ".local" at the end of your Active Directory domain name, you can ensure that your internal domain remains separate from your Internet domain.

Now you are presented with the NetBIOS domain name selection (**Figure 1-7**). The NetBIOS domain name is used primarily for compatibility with older operating systems, but it is still integral to the function of Active Directory. If you took my advice in Step 4 about keeping your domain name 15 characters or less, then you should just take the default suggestion here. The example NetBIOS domain name here will be TESTDOMAIN. Click "Next" to continue.

Figure 1-7

Configure Your Server Wizard

NetBIOS Name
Clients running versions of Windows other than Windows 2000, Windows XP, and the Windows Server 2003 family will use the NetBIOS domain name.

The default NetBIOS name is derived from the DNS domain name.

DNS domain name:

To change the default NetBIOS name, type a new name in the text box below.

NetBIOS domain name:

After configuring the NetBIOS domain name, you will come to the "Summary of Selections" window. This window lists the actions that the wizard will perform. It will automatically install a DHCP server and configure a basic scope. I highly recommend using the Win2k3 server for DHCP address assignment on your network. Keep in mind that you only want one DHCP server in most cases. If you have a broadband router or another server doing DHCP, then make sure to disable it. Click "Next" to continue.

The server will now set up DHCP, DNS, and Active Directory automatically. You will see a popup box like **Figure 1-8** informing you that the server will reboot after performing the installations. Just press the "Ok" button. If you don't have your Windows Server 2003 disk inserted in your CD-ROM drive, you will get prompted to insert it, so make sure you still have it handy. Next, the server will go through several screens that don't require you to do anything. Just wait till the server finishes and reboots itself. This takes a while, so go get a sandwich or something.

Figure 1-8

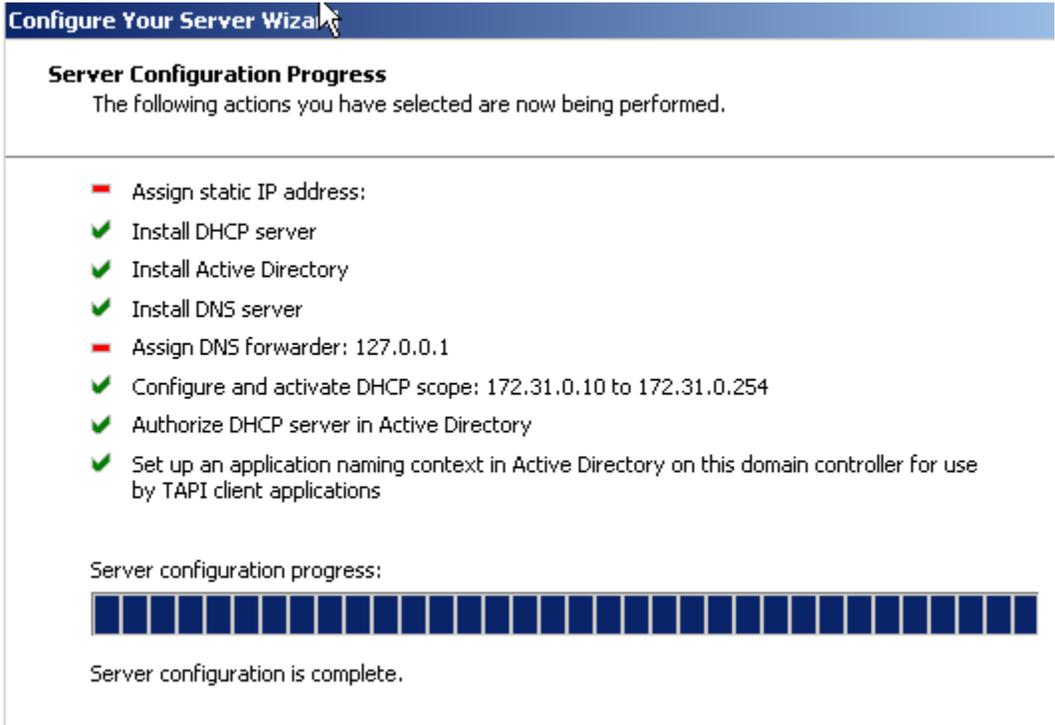
**Step 4:**

When the server finally reboots, it will present you with the login screen like in **Figure 1-9**. Now that this server is a Domain Controller, there is no option to log in locally. Just use the Administrator login and Password that you have been using.

Figure 1-9**Step 5:**

After logging in, you will see a window like **Figure 1-10**. This window reports the status of the installation wizard. If your server was set to use 127.0.0.1 (from following **Part 1**) as its DNS server, you will see an error like in **Figure 1-10** about assigning the DNS forwarder. Don't worry about this. The wizard automatically takes your DNS server from your TCP/IP settings and tries to assign it as a forwarder in the DNS Server configuration. It can't use 127.0.0.1, so it reports an error. Since you should have picked a static IP address before running this wizard, you will see an error on "Assign Static IP Address:" Don't worry about that either. Click "Next" to continue.

Figure 1-10



You will see **Figure 1-11** after clicking next. It looks bad, but again, don't worry about it. Everything completed just fine. Just click "Finish."

Figure 1-11



Step 6:

Now we are ready to install a WINS server. Click "Start," then click "Manage Your Server" shown in **Figure 1-2** on page 1. Now we are going to add a role like we did in **Step 2**, so click on "Add or remove a role." Choose the WINS server role shown in **Figure 1-12** and click "Next." You will see a summary screen next, so just click the "Next" button to continue. Once it is finished, you will see a window that says "This server is now a WINS server." Click "Finish" here to close that window.

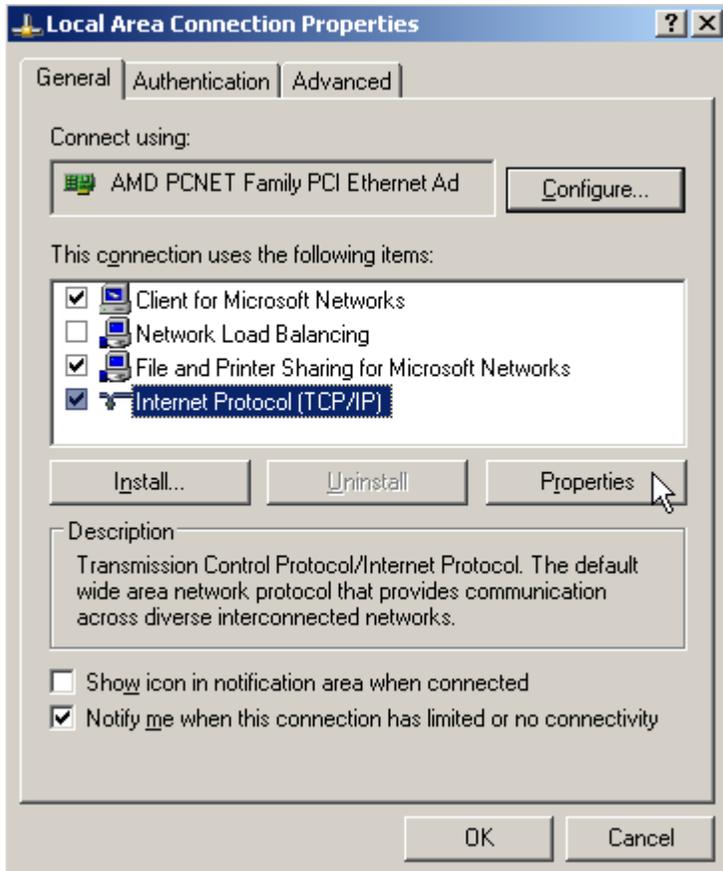
Figure 1-12

Server Role	Configured
File server	No
Print server	No
Application server (IIS, ASP.NET)	No
Mail server (POP3, SMTP)	No
Terminal server	No
Remote access / VPN server	No
Domain Controller (Active Directory)	Yes
DNS server	Yes
DHCP server	Yes
Streaming media server	No
WINS server	No

Step 7:

Now we need to configure the server's TCP/IP settings to make sure it is pointing to itself for DNS and WINS information. Click the "Start" button, navigate to the Control Panel, then to Network Connections, then right click on your network connection. It is probably "Local Area Connection." In the context menu that pops up, choose "Properties." You should now see something similar to **Figure 1-13**.

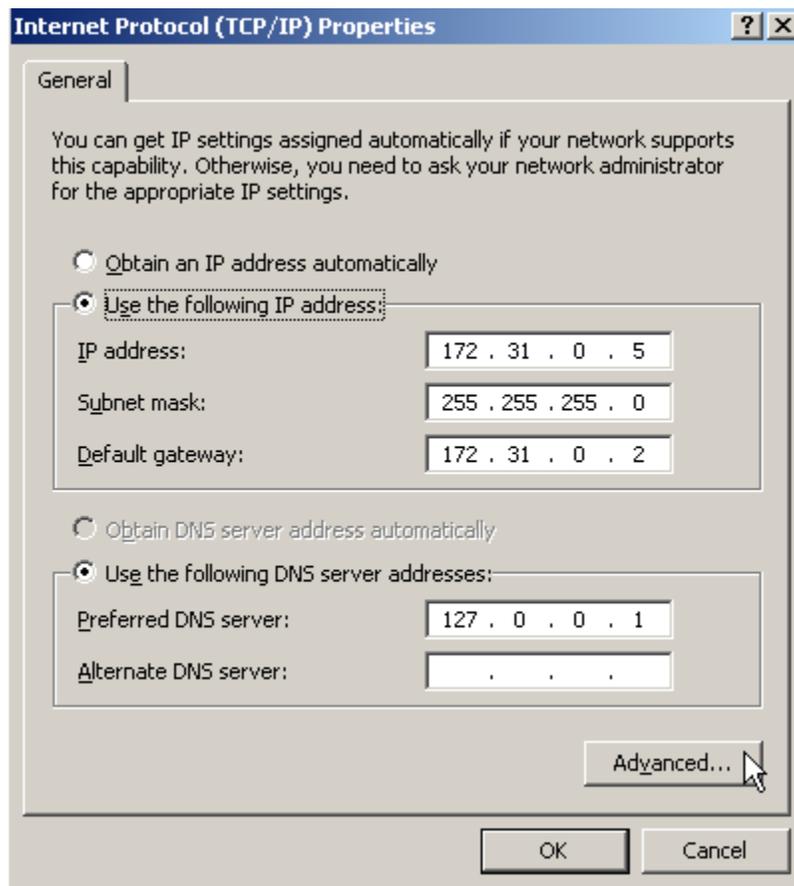
Figure 1-13



Click on the "Internet Protocol (TCP/IP)" line to highlight it, and then click "Properties" as shown in **Figure 1-13**.

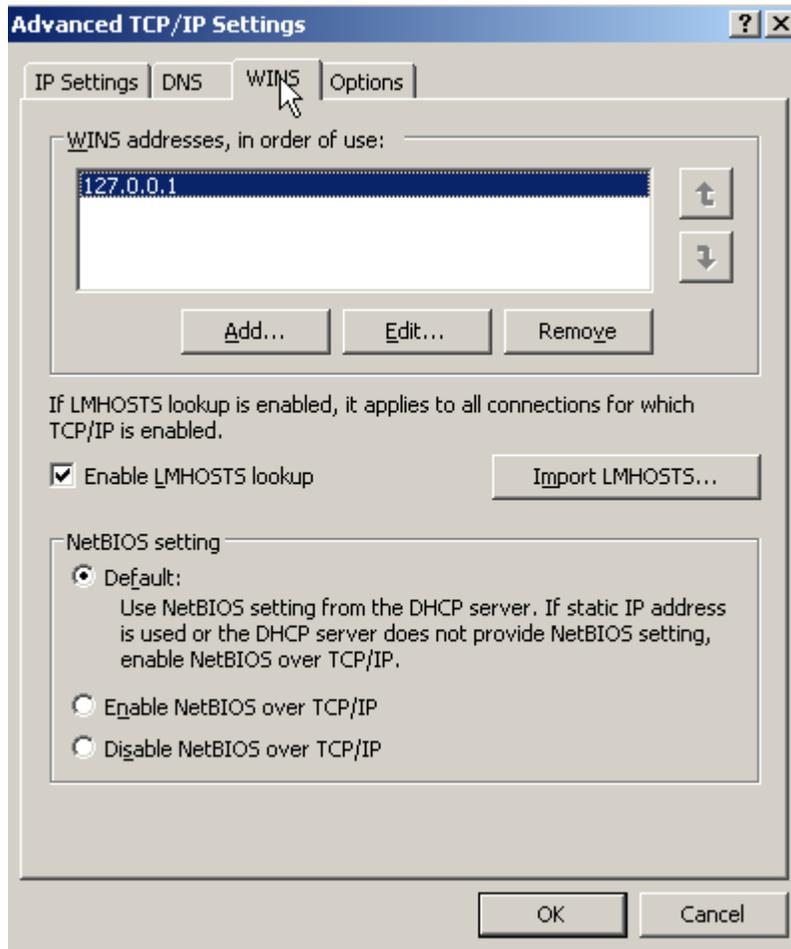
Now you will see **Figure 1-14**. The only thing to note here is that you should have 127.0.0.1 as your DNS server. This will let the server resolve its own DNS queries. Click the "Advanced" button and go to Step 13.

Figure 1-14



After clicking the "Advanced" button you will see a window titled "Advanced TCP/IP Settings." Click on the WINS tab at the top of the window, and you will see **Figure 1-15**. Here we need to put in 127.0.0.1 for the WINS server address. Click "Add" and put in 127.0.0.1 for the address. Click "Ok" on all these windows.

Figure 1-15



Step 8:

Now we need to verify that WINS is working properly. We don't need to configure anything for WINS since we have only one server, so we will just go in and take a look. Go to the "Manage Your Server" wizard that we've used so many times before, scroll down till you see "WINS Server" like **Figure 1-16**, and click "Manage this WINS server."

Figure 1-16



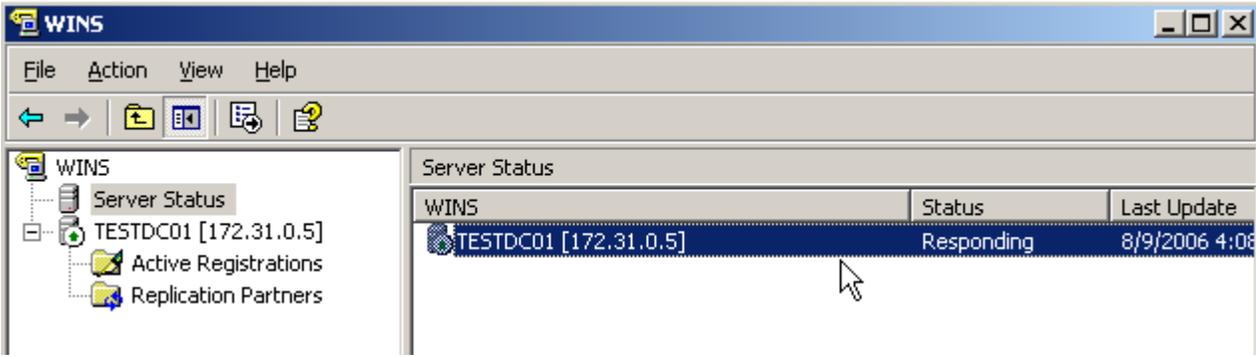
The WINS management console should open up now. If you see a firewall popup like **Figure 1-17**, just click "Unblock" to allow the management console to function.

Figure 1-17



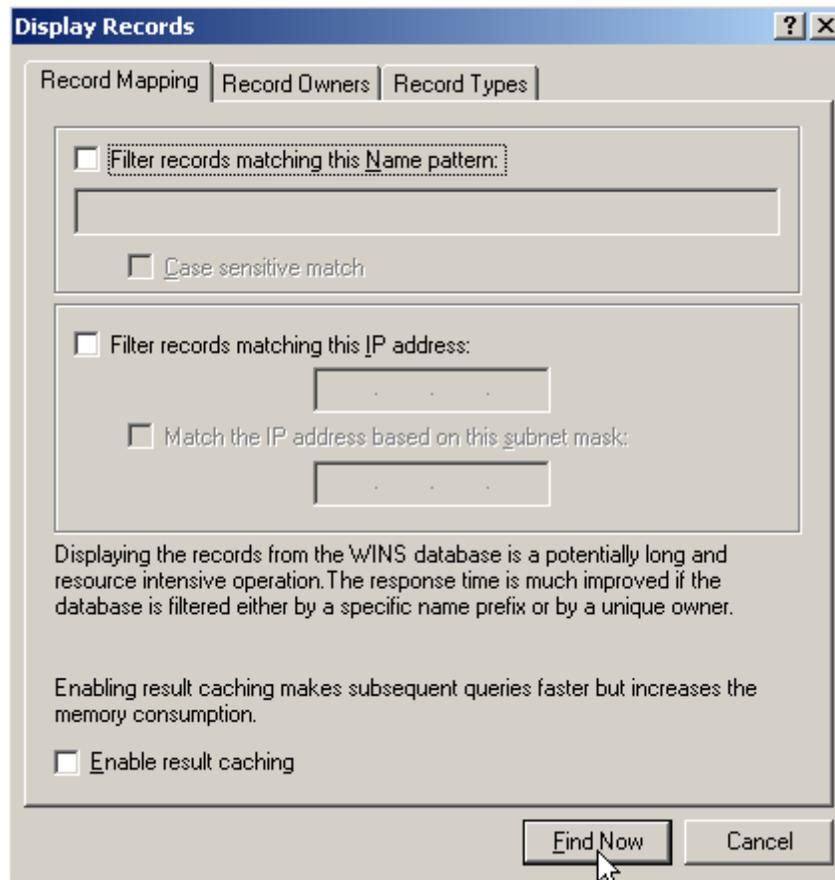
When the WINS management console opens, click on "Server Status" on the left. You should see something similar to **Figure 1-18**. If it says "Responding" then you are in good shape so far.

Figure 1-18



We need to make sure there are some records in our WINS server before we move on. To do this, right click on the "Active Records" entry in the left-hand pane of the management console window. From the context menu, choose "Display Records". The "Display Records" window will now pop up as shown in **Figure 1-19**. There are many options here, but we don't need to use any of them right now. Just click the "Find Now" button at the bottom.

Figure 1-19



In the right-hand pane of the console, you should see several records. Your screen probably won't look exactly like **Figure 1-20**, but it should be close. After verifying the records, go ahead and close the console.

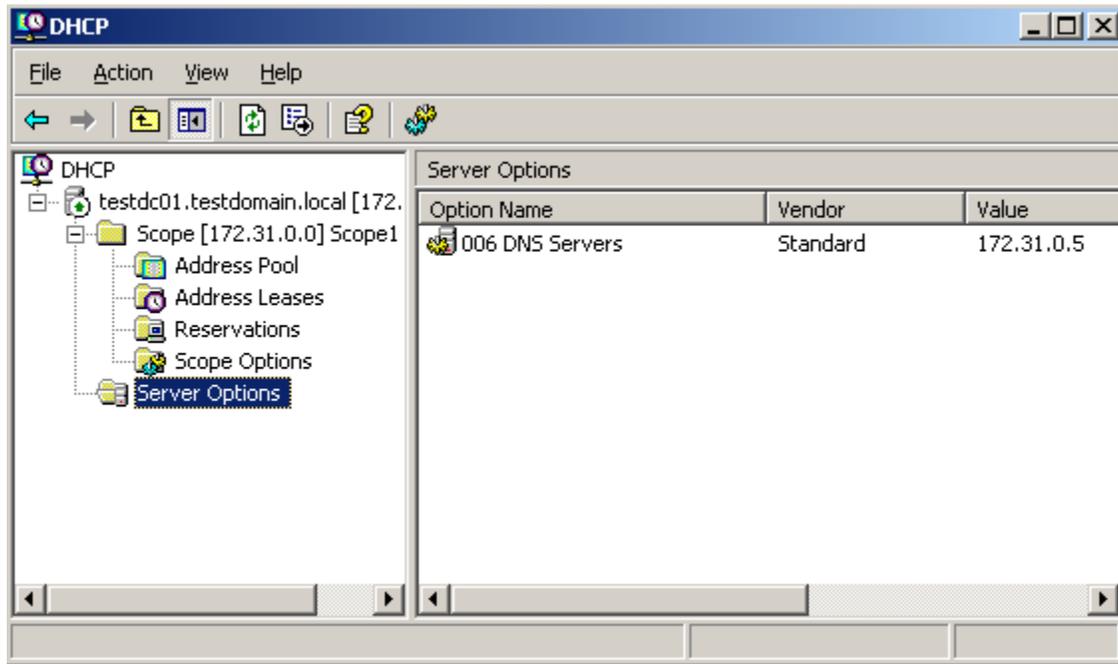
Figure 1-20

Active Registrations		Records filtered: 5 -- Records scanned: 5		
Record Name	Type	IP Address	State	
TESTDOMAIN	[1Bh] Domain Maste...	172.31.0.5	Active	
TESTDC01	[00h] WorkStation	172.31.0.5	Active	
TESTDC01	[20h] File Server	172.31.0.5	Active	
TESTDOMAIN	[00h] Workgroup	172.31.0.5	Active	
TESTDOMAIN	[1Ch] Domain Contr...	172.31.0.5	Active	

Step 9:

Now that we have WINS set up and ready to go, we can configure our DHCP server. Once again, go to the "Manage Your Server" wizard and find the DHCP Server section. Click "Manage this DHCP Server" and wait for the DHCP management console or MMC. As a sidenote: MMC stands for Microsoft Management Console. It is a universal management interface, and it is quite powerful. You can create custom management interfaces by just running "mmc" from the "Start" -> "Run" dialog. It is worth learning more about since it can really ease the day to day management of the server. Ok, back on track. Now once the DHCP MMC loads, it should look something like **Figure 1-21**.

Figure 1-21

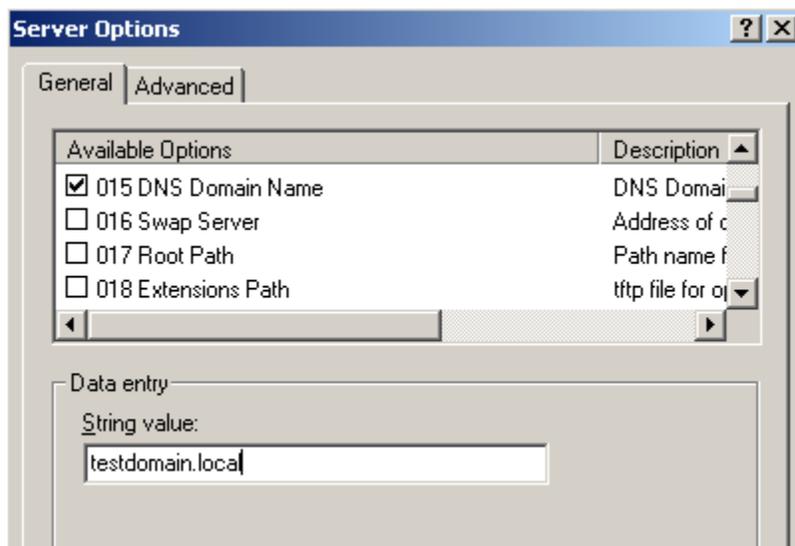


Click on the "Server Options" section in the left pane. You should just see the DNS Server option configured like in **Figure 1-21**. We need to configure several more to get the network clients configured properly. First, however, I want to go into just a little DHCP theory.

DHCP stands for Dynamic Host Configuration Protocol, and it automatically configures the TCP/IP information for network clients. This means that you can just plug in your Windows or Linux computers to your network, and you don't have to tell them what IP address to use, what default gateway, DNS server, WINS server, or DNS domain name to use. The DHCP server does it all for you. Pretty handy, huh! DHCP uses "scopes" or blocks of addresses to configure clients. When a client connects to the network, it broadcasts out on the LAN looking for DHCP information. The DHCP server receives this broadcast and makes a note of which network it came in on. Then if it has a scope for that network, it will configure that client with address information and any of a number of configured options. There are two sorts of options used in DHCP: Scope options and Server options. Server options are given to all DHCP clients who get information from this server. Scope options are only given to clients that get configured from that particular scope. Here, we will configure only one scope option: the default gateway. Configuring the DHCP server this way should save you some headache later on if your network grows.

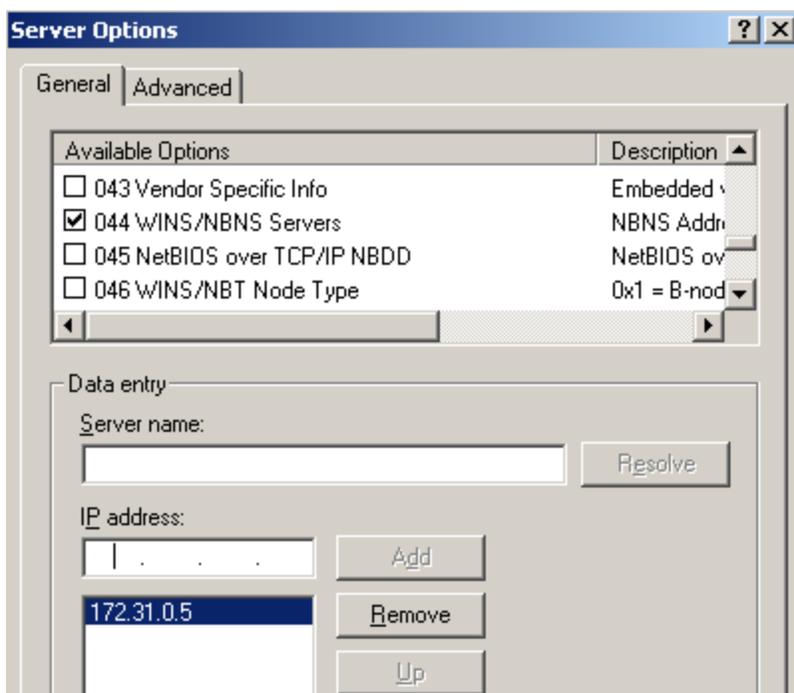
Now back to the MMC. Right-click on the "Server Options" entry in the left pane and choose "Configure Options" from that context menu. You should see a new window with a list of options. Scroll down until you see the "015 DNS Domain Name" shown in **Figure 1-22**. Enter the Active Directory domain name you chose earlier. Click "Apply," but don't close the window yet. We need to configure more options first.

Figure 1-22



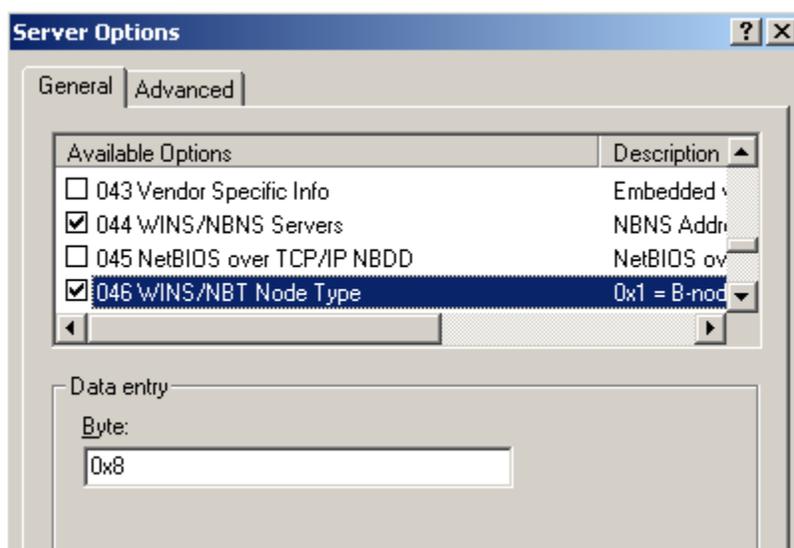
Continue scrolling down until you see "044 WINS/NBNS Servers" as shown in **Figure 1-23**. Enter your server IP address in the "IP Address" area and click "Add". Don't worry about the "Server Name" box. Now click "Apply" again and do not close the window.

Figure 1-23



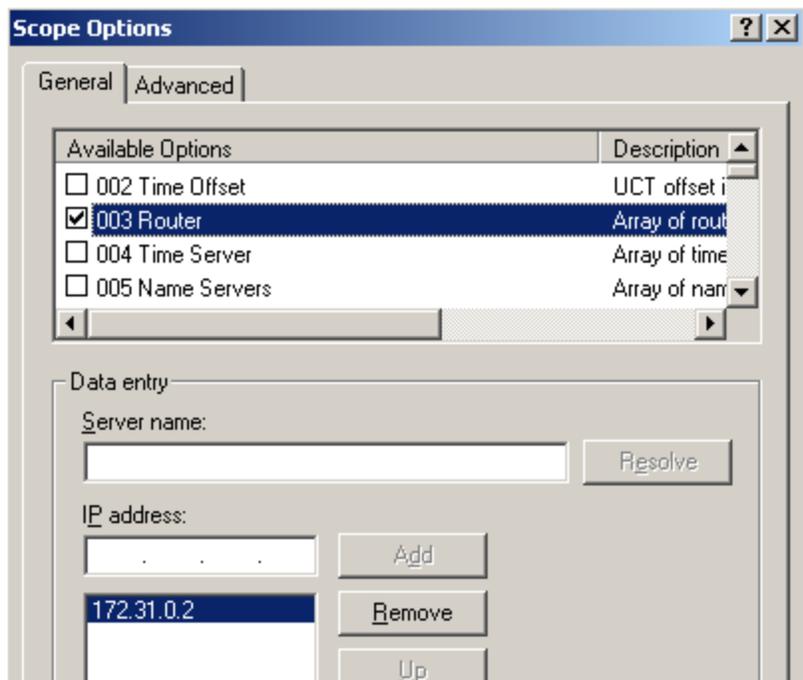
The last server option we need to configure is the NetBIOS node type. Enter "0x8" as the node type just like **Figure 1-24**. Now you can click "Ok" to close this window.

Figure 1-24



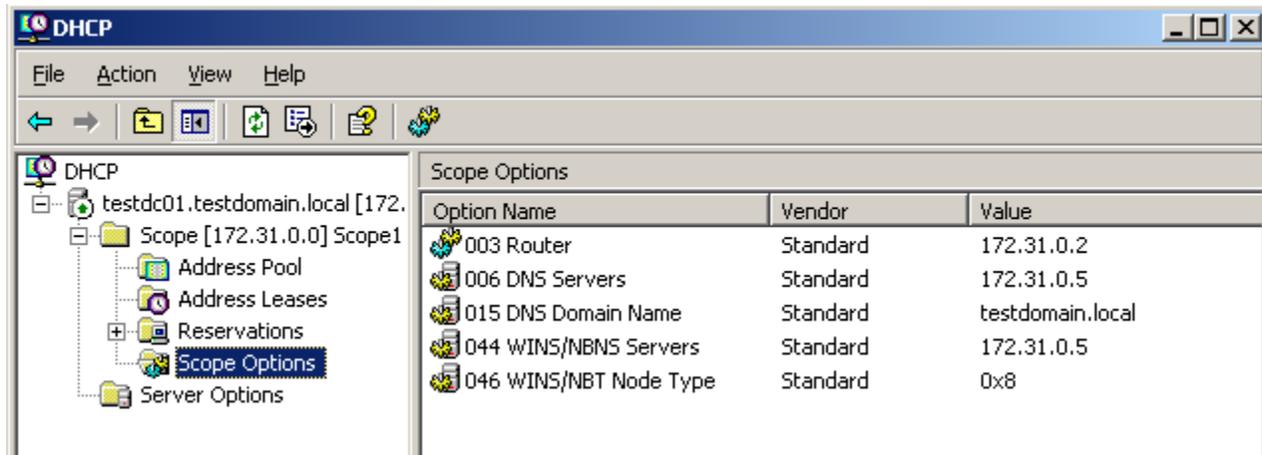
Now that we have the server options configured, we need to add one scope option. Right click on the "Scope Options" entry in the left pane and choose "Configure Options" from the context menu. Another list of options very similar to the one we saw in Step 16 should appear. Look for "003 Router" entry near the top of the list. This will be the default gateway for this scope. You need to enter the default gateway for this network. If you don't have a router anywhere on your network, then you probably don't need to enter anything here. However, if you have a broadband router, enter its internal IP address here. See **Figure 1-25** for an example. Again, just enter the IP address in the IP Address area (I know that sounds like a "duh" statement, but who knows who this will help!) Click "Ok" to exit this window.

Figure 1-25



Now we are done configuring the DHCP options. Click on the "Scope Options" on the left, and you should see something similar to **Figure 1-26**. All the options should be listed on the right. When you are satisfied that everything looks ok here, just close the window.

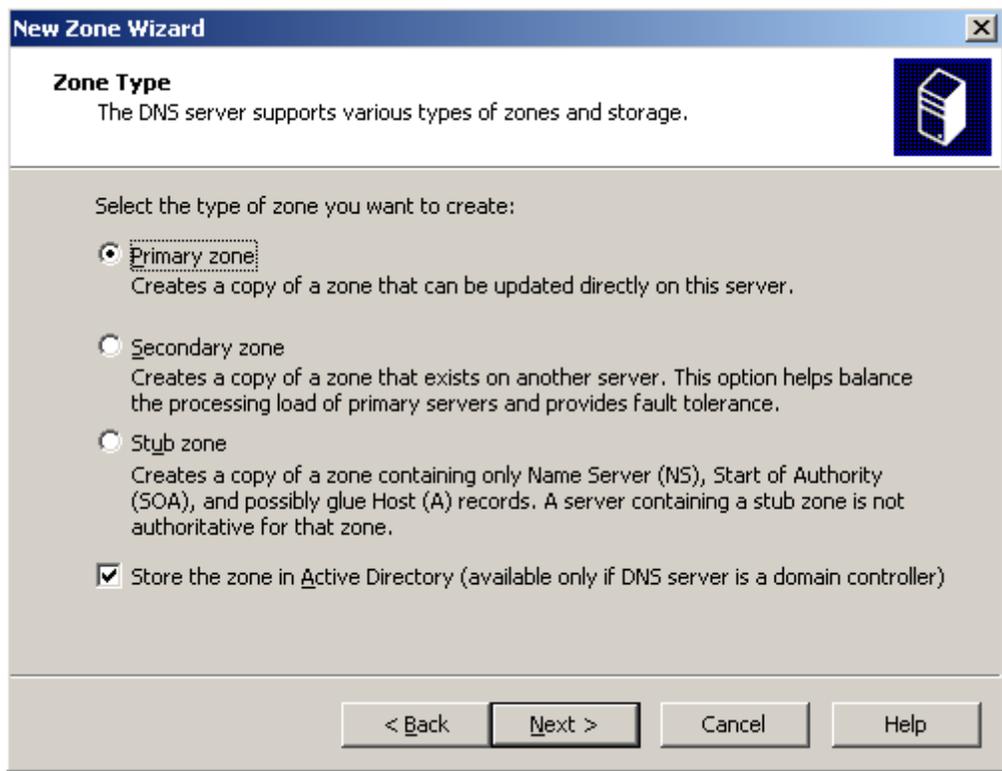
Figure 1-26



Step 10:

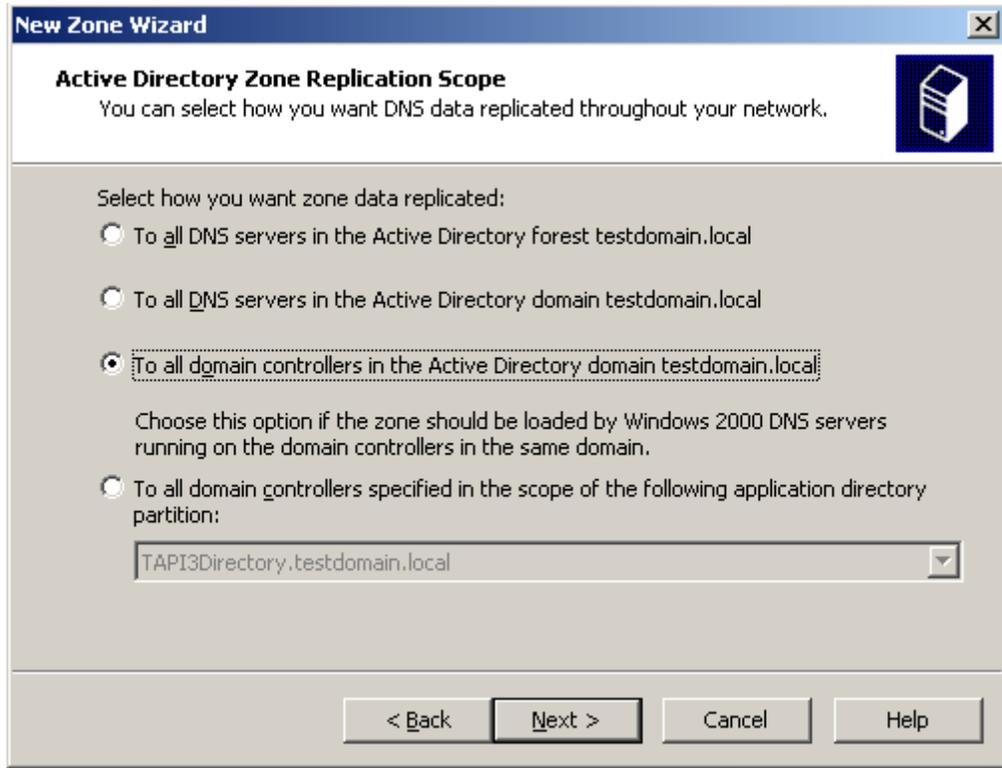
Now we almost finished setting up the networking on our Windows Server. We need to configure a DNS reverse-lookup zone. This will allow name resolution to happen in reverse. So you can find out a DNS name if you know the IP address. Go to the "Manage Your Server" wizard once again, and click on "Manage this DNS Server." From the DNS MMC, click on the "Reverse Lookup Zones" entry in the left side to highlight it. Then right-click on it and choose "New Zone." You will now be presented with the "New Zone Wizard." Click "Next" on the welcome screen. The next window lets us choose the "Zone Type." Here, we want to choose "Primary Zone" like in **Figure 1-27**. Click "Next" to continue.

Figure 1-27



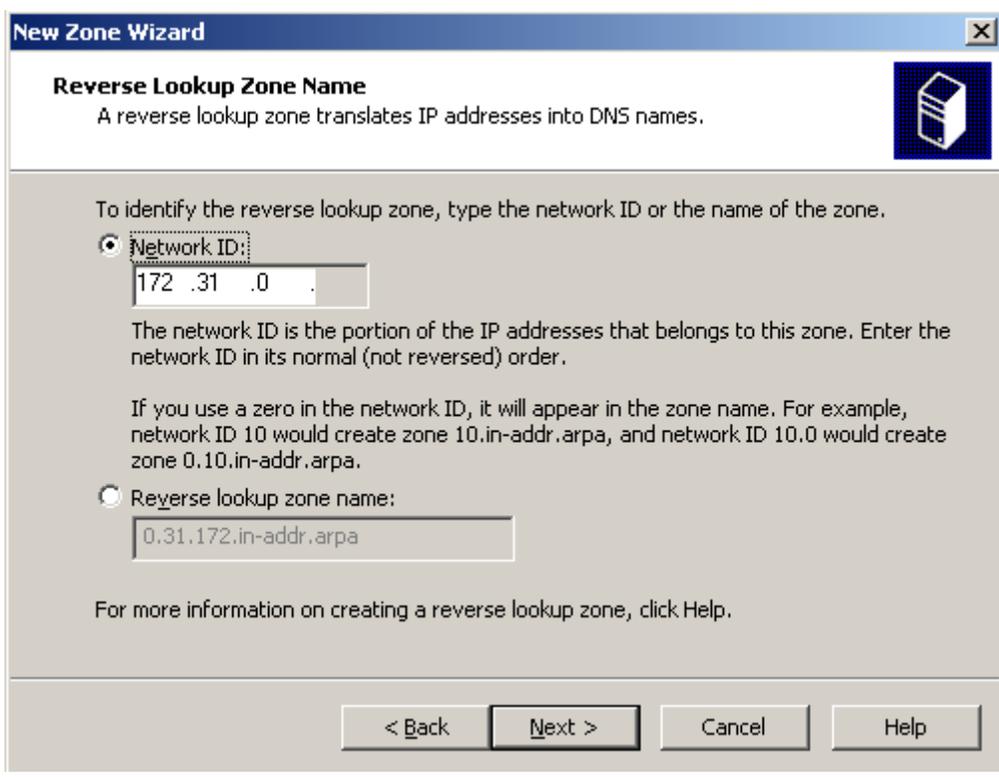
Next we choose the zone replication options shown in **Figure 1-28**. Just accept the defaults here and click "Next" to continue.

Figure 1-28



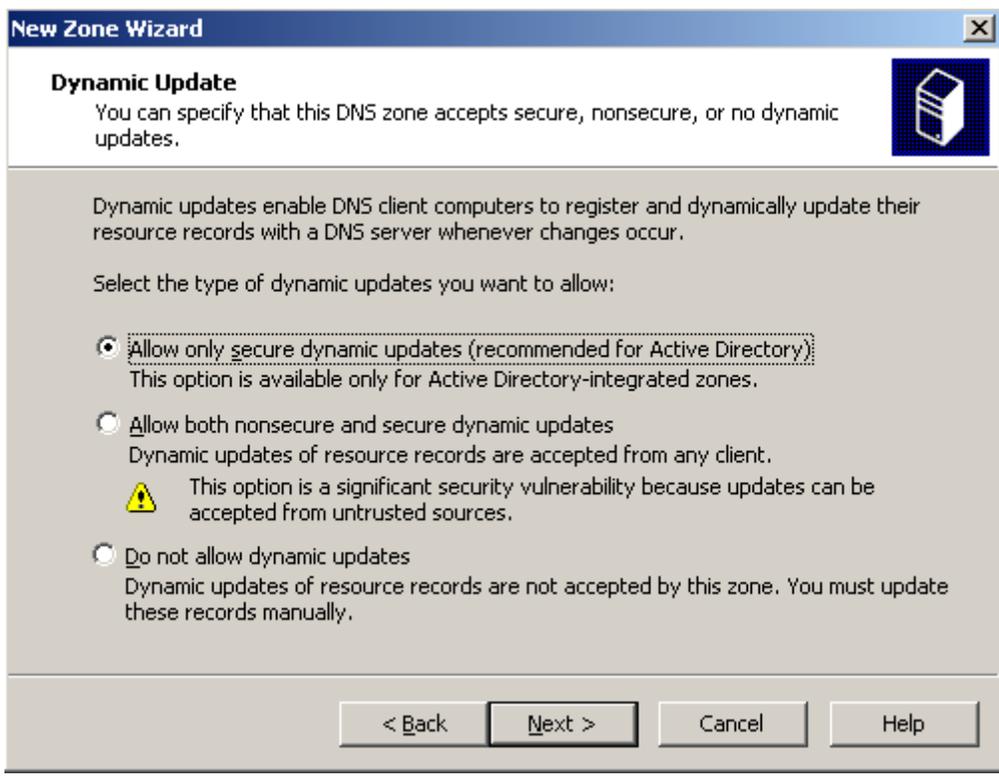
Next, enter the network address that you are using for you network. If your server address is 192.168.1.1 with a subnet mask of 255.255.255.0, then enter 192.168.1 here in the "Network ID" box shown in **Figure 1-29**. Here, I have entered 172.31.0 since my server address is 172.31.0.5. Click "Next" to continue.

Figure 1-29



The next window is shown in **Figure 1-30**. Here, we choose how the zone will be updated by other servers. Just accept the default and click "Next."

Figure 1-30

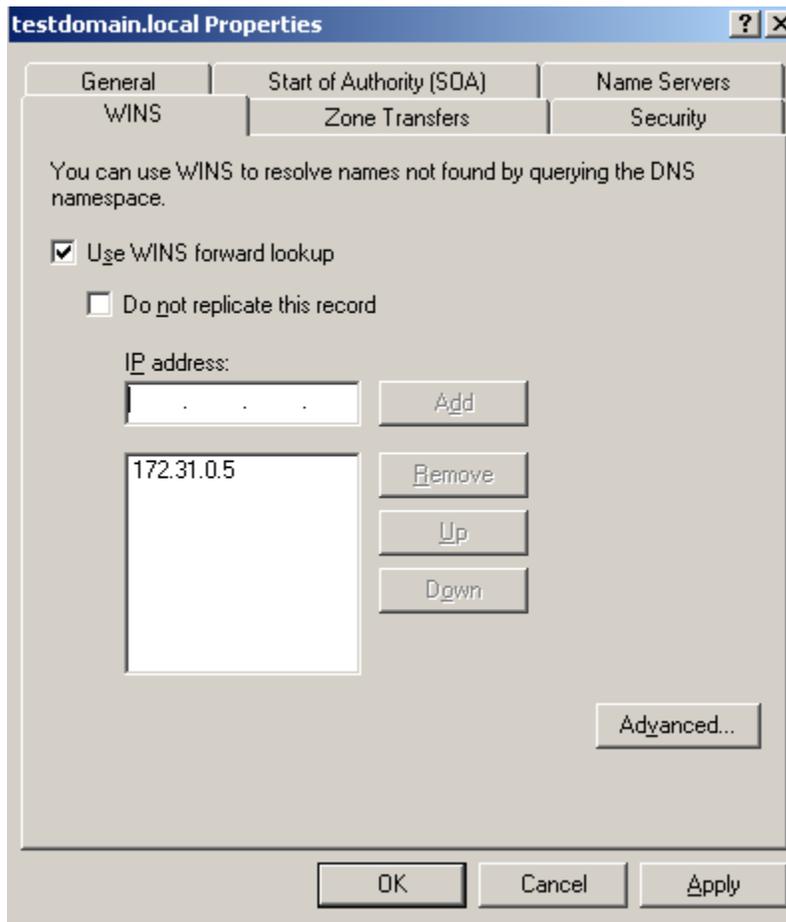


Click "Finish" on the next window shown in **Figure 1-31** to complete the setup of our new zone.

Figure 1-31

The last part of our DNS setup involves configuring DNS to check WINS for name resolution. In case there is a name request that DNS can't answer, it will check WINS to see if it can. This is primarily useful for supporting older clients, but it is easy to set here so we'll do it just in case we need it later. Click on the "plus" sign to expand the "Forward Lookup Zones" and click on your zone name to highlight it. Right click on it and choose "Properties." On the window that pops up, click the WINS tab. You should see something similar to **Figure 1-32**. Check the box labeled "Use WINS Forward Lookup" and enter in your server's IP address in the "IP Address" entry area. Click "Add" to add it to the list. Click "Ok" here and that wraps up the necessary DNS configuration for our server. Close the DNS management console and the Manage Your Server wizard now.

Figure 1-32

**Step 11:**

The only thing left to do now is to update the server with security updates. From the "Windows Setup Post-Setup Security Updates" window, choose "Update this server" shown in **Figure 1-33**. The Windows Update website will launch after clicking. Just follow the normal procedure for updating a Windows machine.

That wraps up Part 2 of "Configuring Windows Server 2003 for a Small Business Network." We installed and configured Active Directory, DHCP, DNS, and WINS. In Part 3, we'll look at creating user accounts and file shares.

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