Creating a New Scope in IPv6

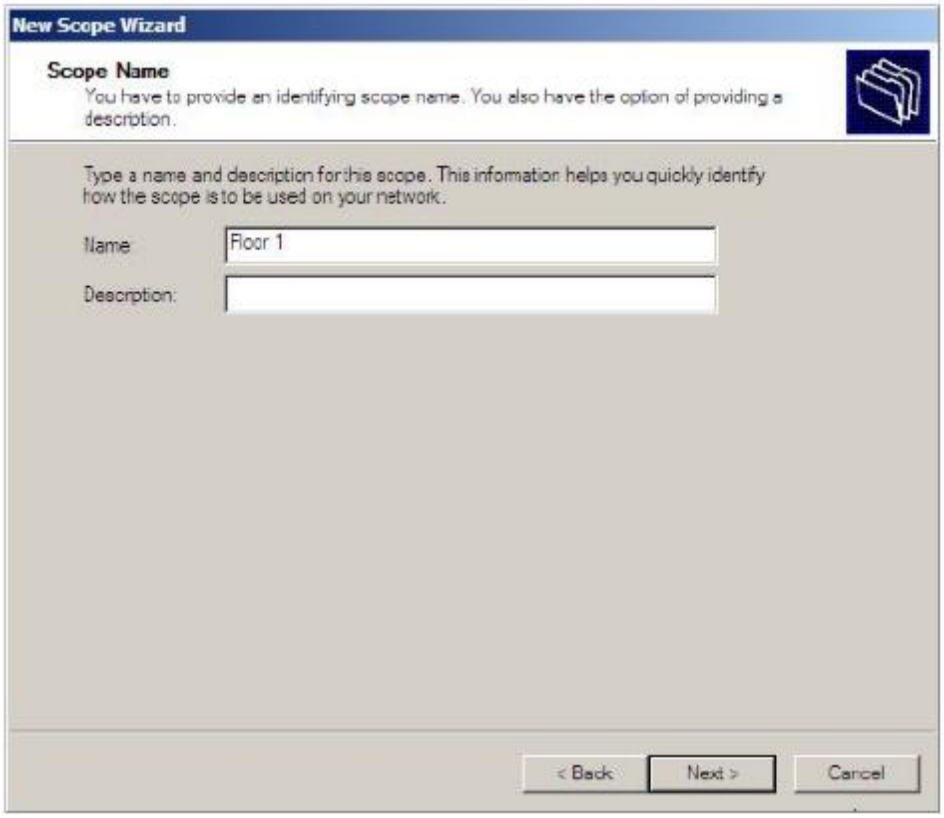
Now that you have seen how to create a new scope in IPv4, we'll go through the steps to create a new scope in IPv6.

To create a scope, right-click the IPv6 option in the DHCP snap-in under the server name and select the Action ➢ New Scope command. This starts the New Scope Wizard. Just as with creating a scope in IPv4, the welcome page of the wizard tells you that you've launched the New Scope Wizard. We will look at each page of the wizard in the following sections.

Setting the Screen Name

The Scope Name page (see Figure 10.11) allows you to enter a name and description for your scope. These will be displayed by the DHCP snap-in.

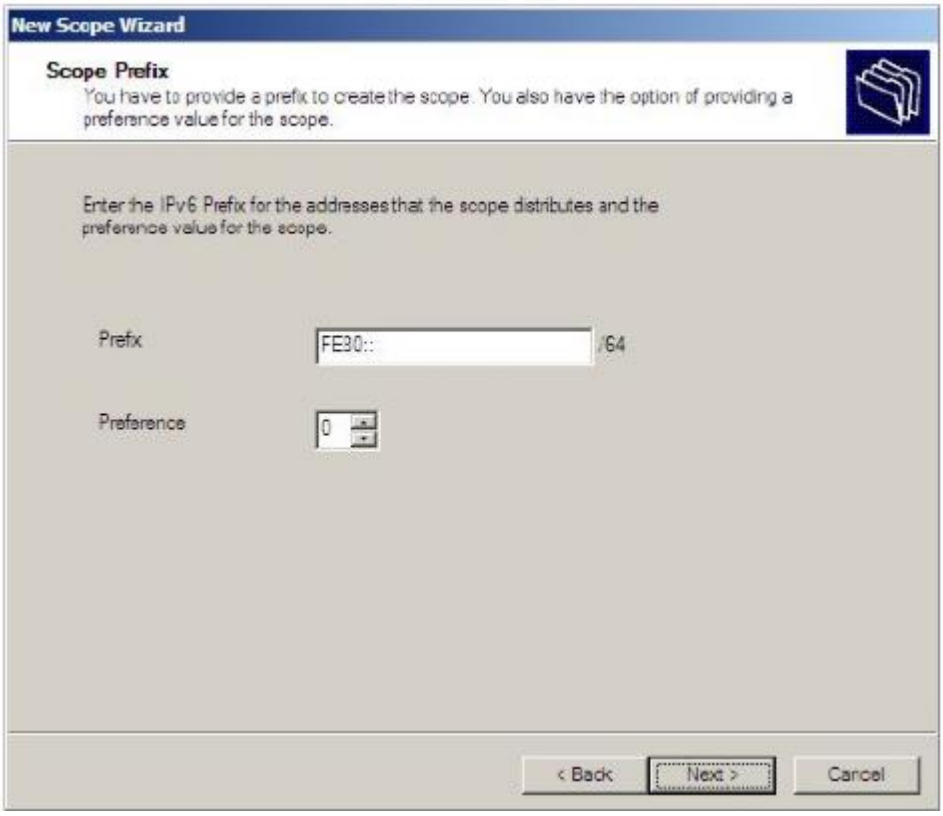
FIGURE 10.11 IPv6 Scope Name page of the New Scope Wizard



Scope Prefix

The Scope Prefix page (see Figure 10.12) gets you started creating the IPv6 scope. IPv6 has three types of addresses, which can be categorized by type and scope:

FIGURE 10.12 Scope Prefix page of the New Scope Wizard



Unicast Addresses *One-to-one.* A packet from one host is delivered to another host. The following are some examples of IPv6 unicast:

- The unicast prefix for site-local addresses is

FEC0::/48.

- The unicast prefix for link-local addresses is FE80::/64.

Figure 10.12 shows the link-local prefix filled in.

The 6to4 address allows communication between two hosts running both IPv4 and IPv6. The way to calculate the 6to4 address is by combining the global prefix 2002::/16 with the 32 bits of a public IPv4 address of the host. This gives you a 48-bit prefix. 6to4 is described in RFC 3056.

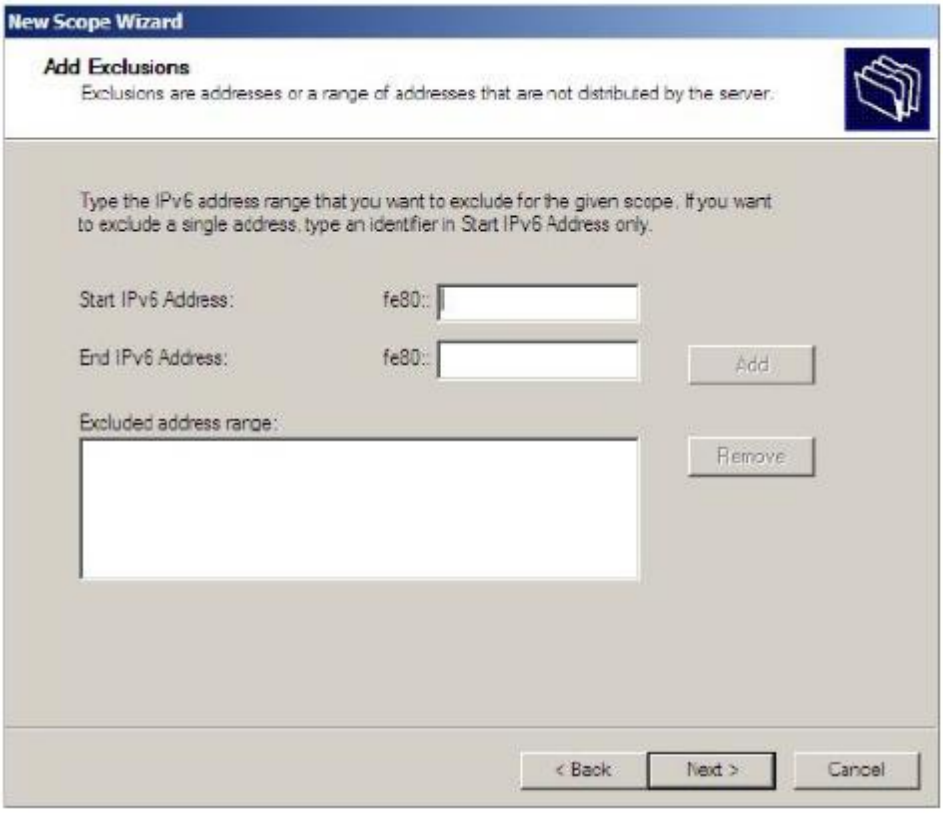
Multicast addresses *One-to-many*. A packet from one host is delivered to multiple hosts (but not everyone). The prefix for multicast addresses is FF00::/8.

Anycast addresses A packet from one host is delivered to the nearest of multiple hosts (in terms of routing distance).

Adding Exclusions

As with the IPv4 New Scope Wizard, the Add Exclusions page (see Figure 10.13) allows you to create exclusion ranges. Exclusions are TCP/IP numbers that are in the pool but do not get issued to clients. To exclude one address, put it in the Start IPv6 Address field. To exclude a range, also fill in the End IPv6 Address field.

FIGURE 10.13 Add Exclusions page of the New Scope Wizard

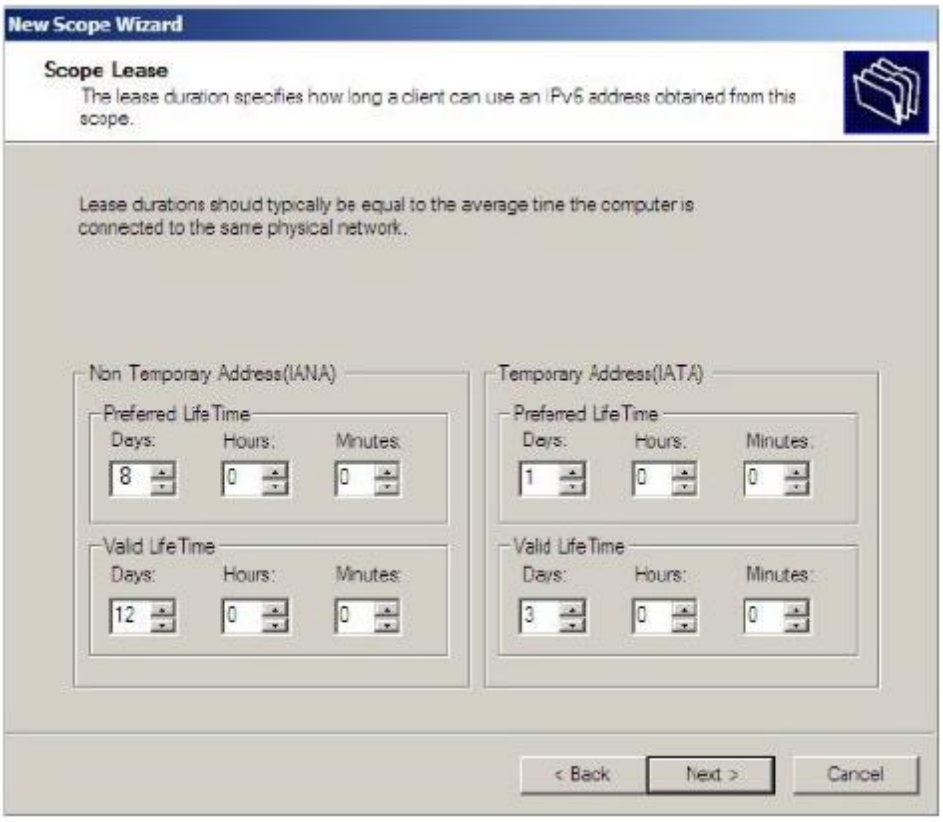


Setting a Lease Duration

The Scope Lease page (see Figure 10.14) allows you to set how long a device gets to use an assigned IP address before it has to renew its

lease. You can set two different lease durations. The section labeled Non Temporary Address (IANA) is the lease time for your more permanent hosts (such as printers and server towers). The one labeled Temporary Address (IATA) is for hosts that might disconnect at any time, such as laptops.

FIGURE 10.14 Scope Lease page of the New Scope Wizard

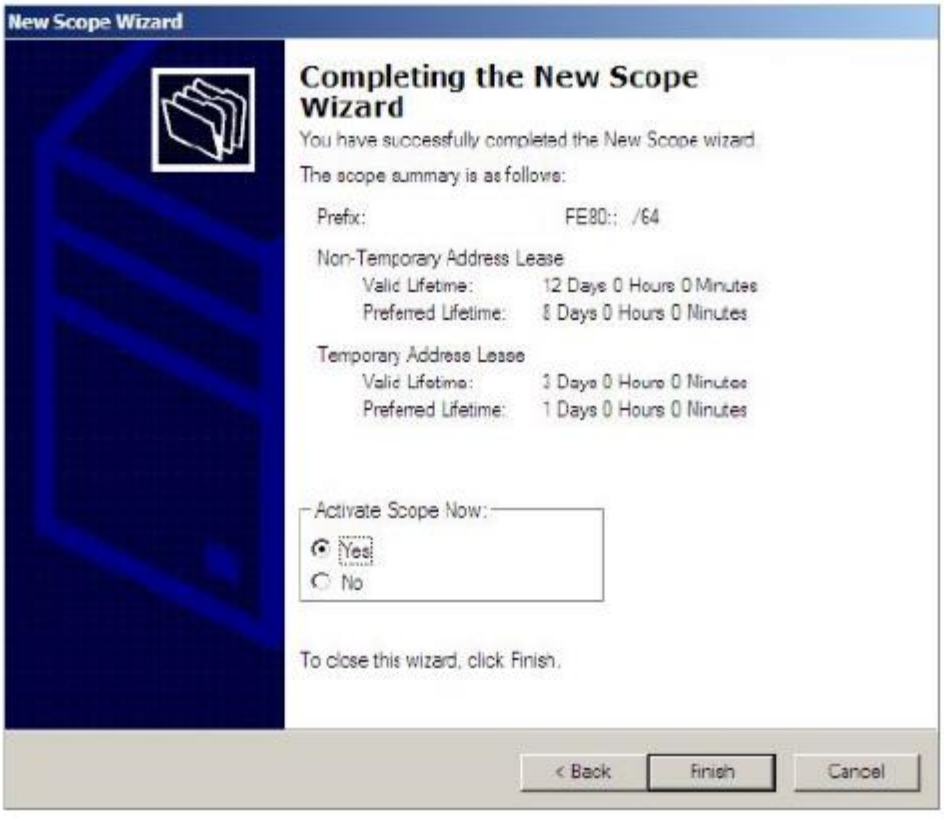


Activating the Scope

The Completing The New Scope Wizard page (see Figure 10.15) gives you the option to activate the scope immediately after creating it.

By default, the wizard will assume that you want the scope activated. If you want to wait to activate the scope, choose No in the Activate Scope Now box.

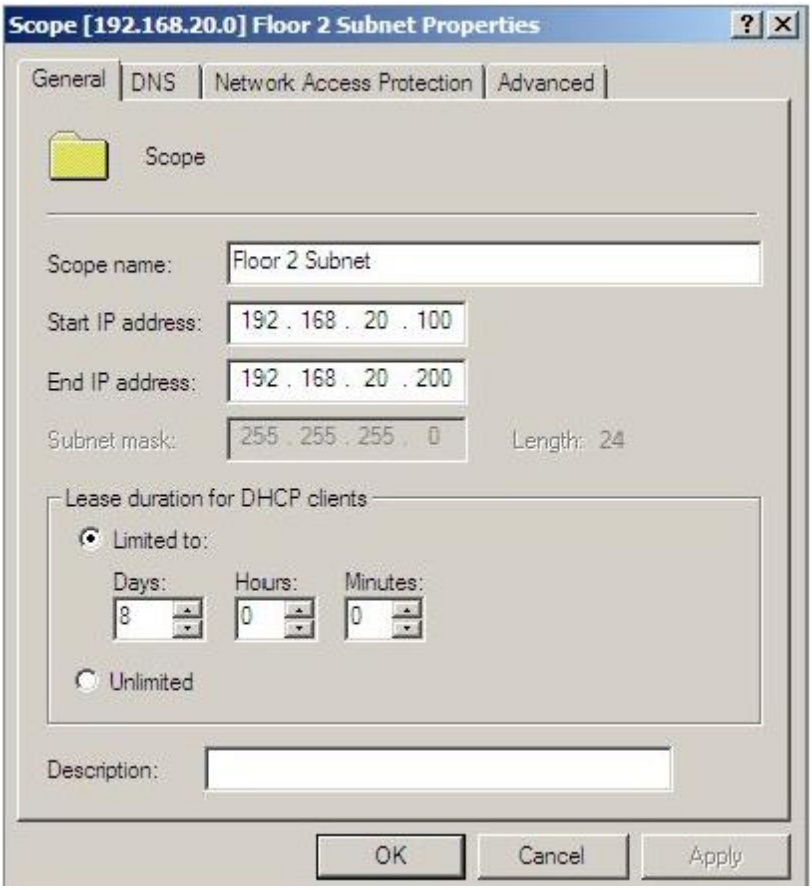
FIGURE 10.15 Completing The New Scope Wizard page of the New Scope Wizard



Changing Scope Properties (IPv4 and IPv6)

Each scope has a set of properties associated with it. Except for the set of options assigned by the scope, you can find these properties on the General tab of the scope's Properties dialog box (see Figure 10.16). Some of these properties, such as the scope name and description, are self-explanatory. Others require a little more explanation:

FIGURE 10.16 General tab of the scope's Properties dialog box for an IPv4 scope



- The Start IP Address and End IP Address fields allow you to set the range of the scope.

- For IPv4 scopes, the settings in the section Lease Duration For DHCP Clients control how long leases in this scope are valid.

  The IPv6 scope dialog box includes a Lease tab where you set the lease properties.

When you make changes to these properties, they have no effect on existing leases. For example, say that you create a scope from 172.30.1.1 to 172.30.1.199. You use that scope for a while and then edit its properties to reduce the range from 172.30.1.1 to 172.30.1.150. If a client has been assigned the address 172.30.1.180, which was part of the scope before you changed it, the client will retain that address until the lease expires but will not be able to renew it.

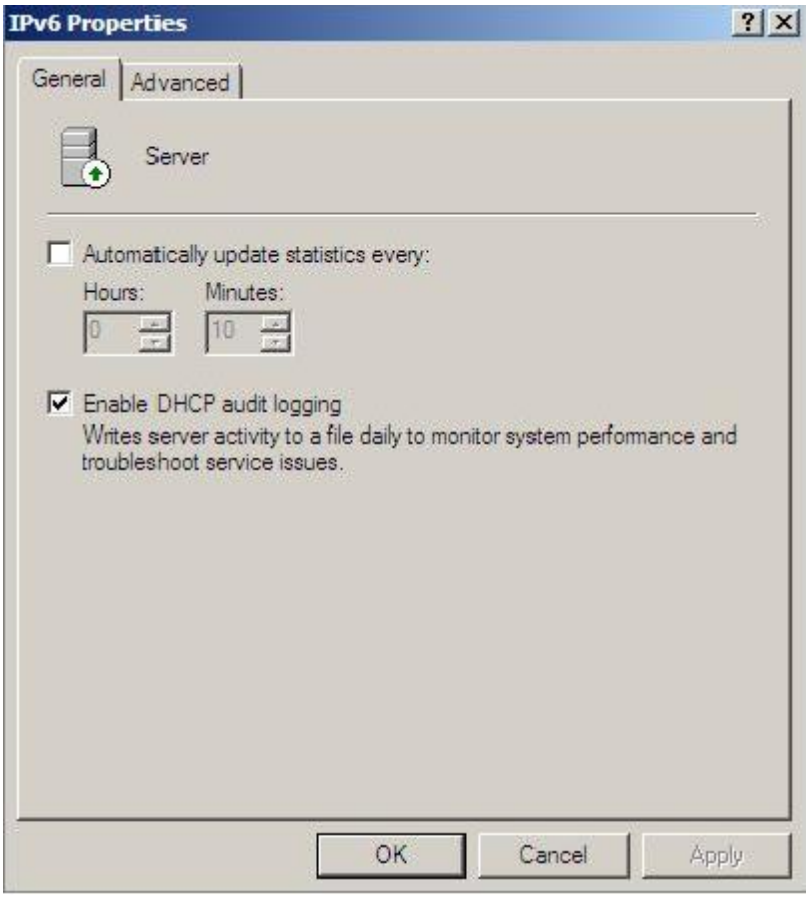
Changing Server Properties

Just as each scope has its own set of properties, so too does the server itself. You access the server properties by right-clicking the IPv4 or IPv6 object within the DHCP management console and selecting Properties.

IPv6 Server Properties

The IPv6 Properties dialog box for the server has two tabs: General and Advanced. On the General tab (see Figure 10.20), you can configure the following settings:

FIGURE 10.20 Server's IPv6 Properties, General tab

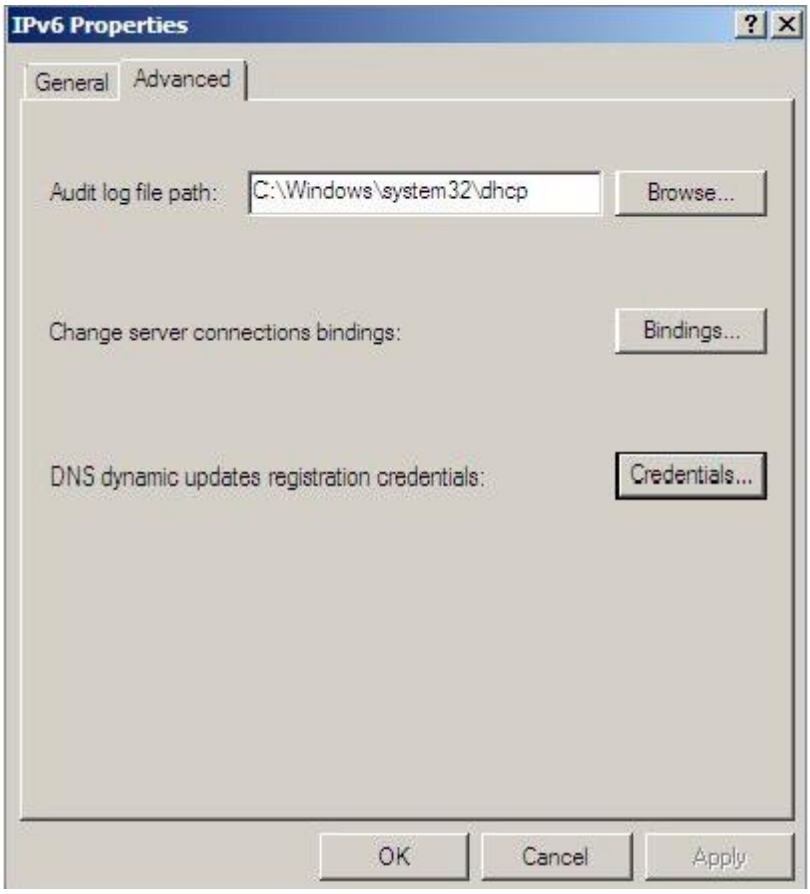


- Frequency with which statistics are updated
- DHCP auditing

The Advanced tab (see Figure 10.21) allows

you to configure the following settings:

FIGURE 10.21 Server's IPv6 Properties, Advanced tab



- Database path for the audit log file path.
- Connection bindings.
- Registration credentials for dynamic DNS. The registration credential is the user account that DHCP will use to register clients with Active Directory.

Managing Reservations and Exclusions

After defining the address pool for your scope, the next step is to create reservations and exclusions, which reduce the size of the pool. In the following sections, you will learn how to add and remove exclusions and reservations.

Adding and Removing Exclusions

When you want to exclude an entire range of IP addresses, you need to add that range as an

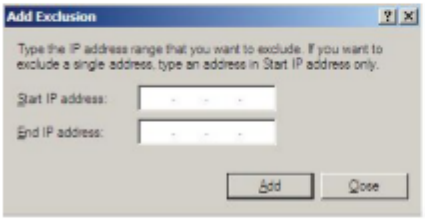
exclusion. Ordinarily, you'll want to do this before you enable a scope because that prevents any of the IP addresses you want excluded from being leased before you have a chance to exclude them. In fact, you can't create an exclusion that includes a leased address—you have to get rid of the lease first.

Adding an Exclusion Range

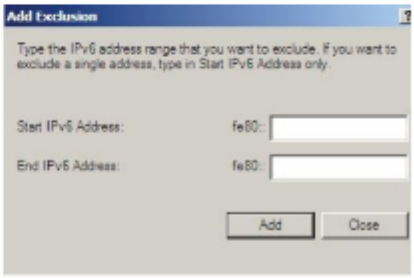
Here's how to add an exclusion range:

1. Open the DHCP snap-in and find the scope to which you want to add an exclusion (either IPv4 or IPv6).
2. Expand the scope so that you can see its Address Pool item for IPv4 or the Exclusion section for IPv6.
3. Right-click the Address Pool or Exclusion section, and choose the New Exclusion Range command.
4. When the Add Exclusion dialog box appears (see Figure 10.22), enter the IP addresses you want to exclude. To exclude a single address, type it in the Start IP Address field. To exclude a range of addresses, also fill in the End IP Address field.

FIGURE 10.22 Add Exclusion dialog boxes for IPv4 and IPv6



IPv4 Add Exclusion dialog box



IPv6 Add Exclusion dialog box

5. Click the Add button to add the exclusion.

When you add exclusions, they appear in the Address Pool node, which is under the Scope section for IPv4 and under the Exclusion section of IPv6.

Removing an Exclusion Range

To remove an exclusion, just right-click it and choose the Delete command. After confirming your command, the snap-in removes the excluded range and the addresses become immediately available for issuance.

Adding and Removing Reservations

Adding a reservation is simple as long as you have the MAC address of the device for which you want to create a reservation. Because reservations belong to a single scope, you create and remove them within the Reservations node beneath each scope.

Adding a Reservation

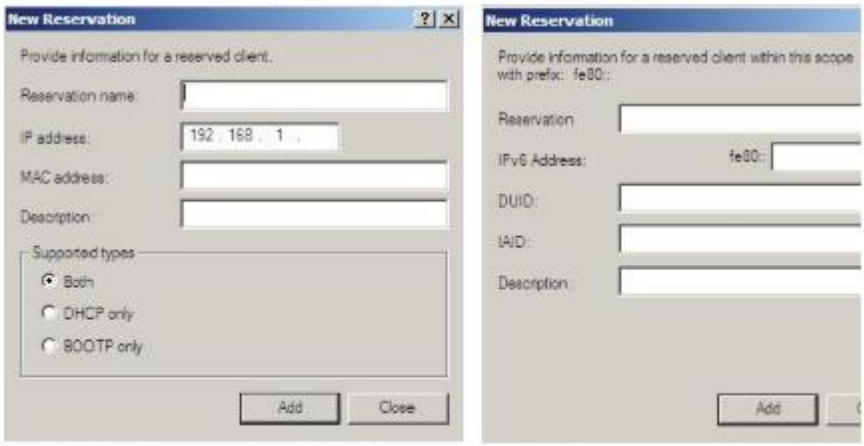
To add a reservation, perform the following tasks:

1. Right-click the scope, and select New

Reservation.

This displays the New Reservation dialog box, shown in Figure 10.23.

FIGURE 10.23 New Reservation dialog boxes for IPv4 and IPv6



IPv4 New Reservation dialog box

IPv6 New Reservation dialog

2. Enter the IP address and MAC address or ID for the reservation.

To find the MAC address of the local computer, use the `ipconfig` command. To find the MAC address

of a remote machine, use the `nbtstat-a`*`computername`* command.

3. If you want, you can also enter a name and description.

4. For IPv4, in the Supported Types section, choose whether the reservation will be made by DHCP only, BOOTP only (useful for remote-access devices), or both.

Removing a Reservation

To remove a reservation, right-click it and select Delete. This removes the reservation but does nothing to the client device.

There's no way to change a reservation once it has been created. If you want to change any of the associated settings, you'll have to delete and re-create the reservation.