How to configure IPv6 Address

One option you have is to statically assign a unicast address to a device's interface using either of these two approaches:
Specify all 128-bits manually
Use EUI-64
You can manually specify the entire 128-bit address, or you can specify the subnet ID and have the device use the EUI-64 method to create the interface ID part of the address

Manually Configuring the IPv6 Protocol

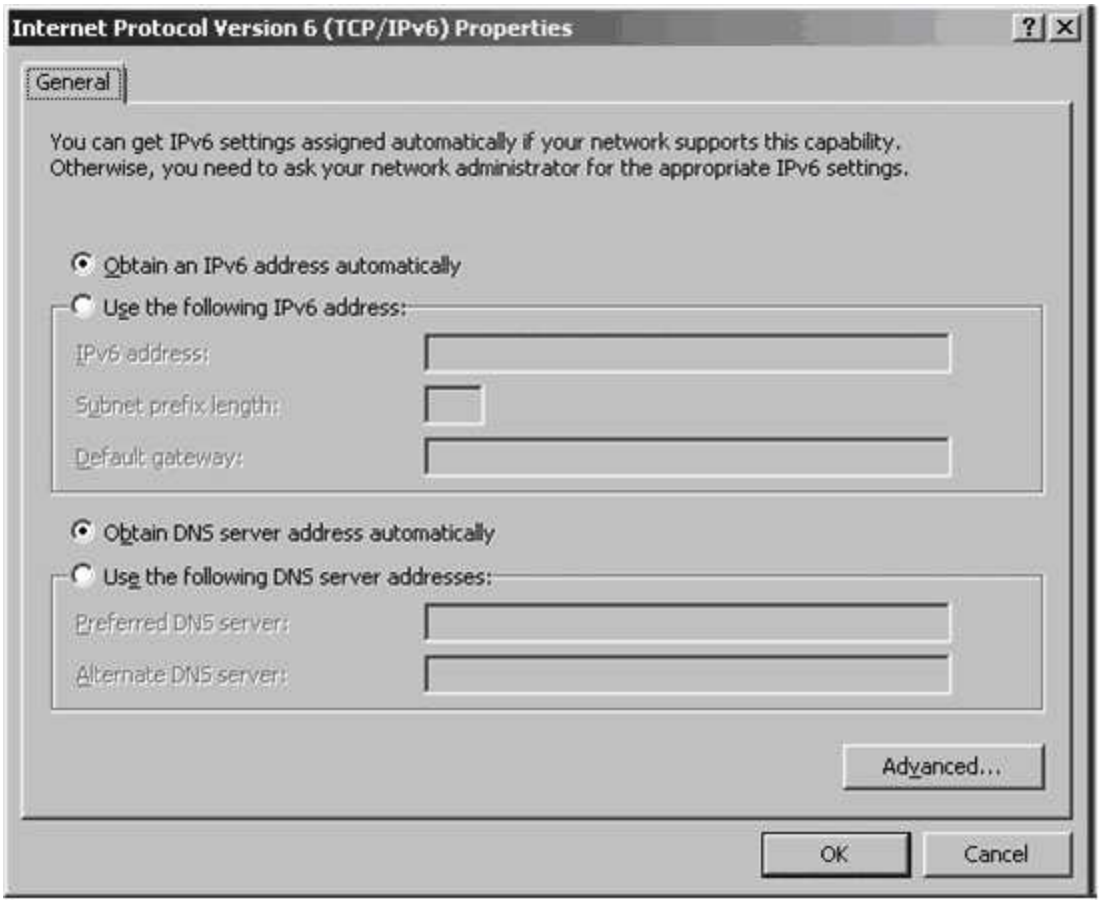
Unlike IPv6 in Windows XP and Windows Server 2003, the IPv6 protocol in Windows Server 2008 and Windows Vista is installed and enabled by default. The IPv6 protocol for Windows Server 2008 and Windows Vista is designed to be auto configuring. For example, it automatically configures link-local addresses for communication between nodes on a link. If there is an IPv6 router on the host's subnet or an ISATAP router, the host uses received router advertisements to automatically configure additional addresses, a default router, and other configuration parameters. You can manually configure IPv6 addresses and other parameters in Windows Vista using the following:

- Form lan card properties
- From command prompt

The properties of Internet Protocol Version 6 (TCP/IPv6) component
Just as you can configure IPv4 settings through the properties of the Internet Protocol Version 4 (TCP/IPv4) component in the Network Connections folder, you can now configure IPv6 settings through the properties of the Internet Protocol Version 6 (TCP/IPv6) component. The set of dialog boxes for IPv6 configuration is very similar to the corresponding dialog boxes for IPv4. However, the properties of the Internet Protocol Version 6 (TCP/IPv6) component provide only basic configuration of IPv6.
Commands in the netsh interface ipv6 context
Just as you can in Windows XP and Windows Server 2003, you can configure IPv6 settings for Windows Server 2008 or Windows Vista from the interface ipv6 context of the **Netsh.exe** tool. Although typical IPv6 hosts do not need to be manually configured, IPv6 routers must be manually configured.
Configuring IPv6 Through the Properties of Internet Protocol Version 6 (TCP/IPv6)
To manually configure IPv6 settings through the Network Connections folder, do the following:

- From the Network Connections folder, right-click the connection or adapter on which you want to manually configure IPv6, and then click Properties.
- On the Networking tab for the properties of the connection or adapter, under This Connection Uses The Following Items, double-click Internet Protocol Version 6 (TCP/IPv6) in the list.

Windows Vista displays the Internet Protocol Version 6 (TCP/IPv6) Properties dialog box.
The Internet Protocol Version 6 (TCP/IPv6) Properties dialog box



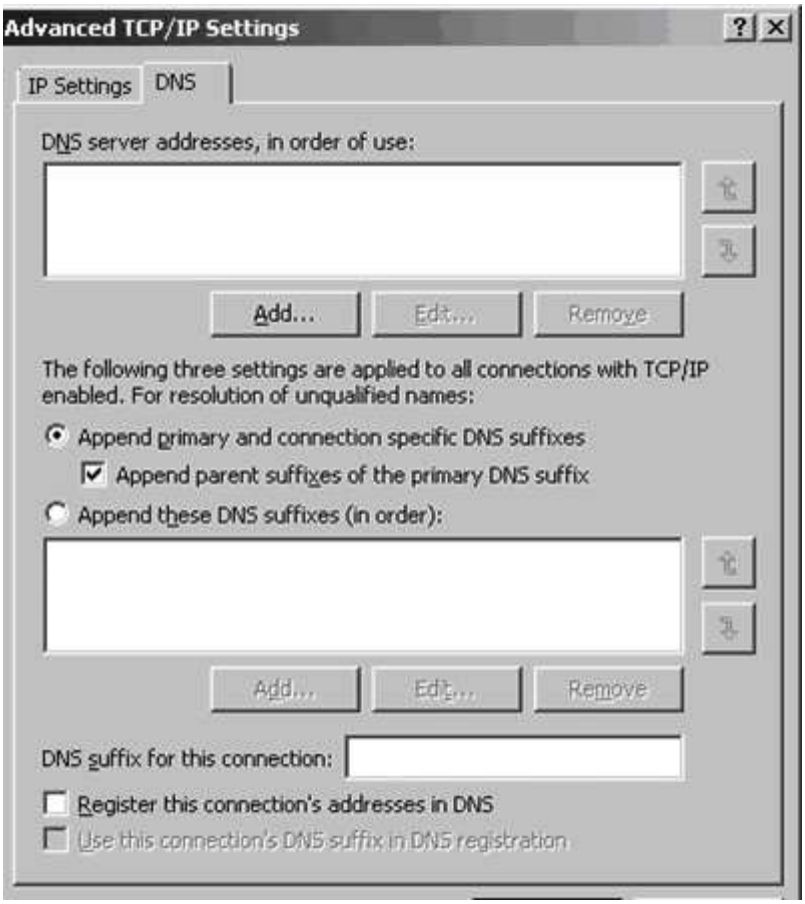
General Tab

On the General tab of the Internet Protocol Version 6 (TCP/IPv6) Properties dialog box, you can configure the following:

- **Obtain an IPv6 address automatically** Specifies that IPv6 addresses for this connection or adapter are automatically determined by stateful or stateless address autoconfiguration.
- **Use the following IPv6 address<** Specifies that an IPv6 address and default gateway for this connection or adapter are manually configured.
- **IPv6 address** Provides a space for you to type an IPv6 unicast address. You can specify additional IPv6 addresses from the Advanced TCP/IP Settings dialog box.
- **Subnet prefix length** Provides a space for you to type the subnet prefix length for the IPv6 address. For typical IPv6 unicast addresses, this value should be set to 64, its default value.
- **Default gateway Provides** a space for you to type the IPv6 unicast address of the default gateway.
- **Obtain DNS server address automatically** Specifies that the IPv6 addresses for DNS servers are automatically determined by stateful address autoconfiguration (DHCPv6).
- **Use the following DNS server addresses** Specifies that the IPv6 addresses of the preferred and alternate DNS servers for this connection or adapter are manually configured.
- **Preferred DNS server** Provides a space for you to type the IPv6 unicast address of the preferred DNS server.
- **Alternate DNS server Provides** a space for you to type the IPv6 unicast address of the alternate DNS server. You can specify additional DNS servers from the Advanced TCP/IP Settings dialog box.

Advanced TCP/IP Settings

From the General tab, you can click Advanced to access the Advanced TCP/IP Settings dialog box. This dialog box is very similar to the Advanced TCP/IP Settings dialog box for the Internet Protocol Version 4 (TCP/IPv4) component except there is no WINS tab (IPv6 does not use NetBIOS and the Windows Internet Name Service [WINS]) or Options tab (TCP/IP filtering is defined only for IPv4 traffic). For IPv6, the Advanced TCP/IP Settings dialog box has IP Settings and DNS tabs.



The IP Settings tab

From the IP Settings tab, you can configure the following:

- Multiple IPv6 addresses (by clicking Add under IP Addresses) For each unicast IPv6 address, you must specify an IPv6 address and a subnet prefix length. The Add button is available only if Use The Following Ipv6 Address has been selected on the General tab of the Internet Protocol Version 6 (TCP/IPv6) Properties dialog box.
- Multiple default gateways (by clicking Add under Default Gateways) For each default gateway, you must specify the IPv6 address of the gateway and whether you want the metric for the default route associated with this default gateway to be manually specified or based on the speed of the connection or adapter.
- Route metrics You can also specify whether to use a specific metric for the routes associated with the configuration of IPv6 addresses or default gateways or a metric determined by the speed of the connection or adapter.

The DNS tab

From the DNS tab, you can configure the following:

- The IPv6 addresses of DNS servers, in order of use (by clicking Add under DNS Server Addresses, In Order Of Use).
- Primary and connection-specific DNS suffix and name registration and devolution behavior. These settings are the same as for IPv4.

Configuring IPv6 with the Netsh.exe Tool

You can also configure IPv6 addresses, default gateways, and DNS servers at the command line using commands in the netsh interface ipv6 context.

Configuring Addresses

To configure IPv6 addresses, you can use the ***netsh interface ipv6 add address*** command with the following syntax:

```
netsh interface ipv6 add address [interface=]InterfaceNameorIndex [address=]IPv6Address
[/PrefixLength] [[type=]unicast|anycast] [[validlifetime=]Time|infinite] [[preferredlifetime=]
Time|infinite] [[store=]active|persistent]
```

- interface The connection or adapter's name or interface index.
- address The IPv6 address to add, optionally followed by the subnet prefix length (default of 64).
- type The type of IPv6 address, either unicast (default) or anycast.
- validlifetime The lifetime over which the address is valid. Time values can be expressed in days, hours, minutes, and seconds (for example, 1d2h3m4s). The default value is infinite.
- preferredlifetime The lifetime over which the address is preferred. Time values can be expressed in days, hours, minutes, and seconds. The default value is infinite.

- store How to store the IPv6 address—either active (the address is removed upon system restart) or persistent (address remains after system restart), which is the default.
  For example, to configure the IPv6 unicast address **2001:db8:290c:1291::1** on the interface named “Local Area Connection” with infinite valid and preferred lifetimes and make the address persistent, you use the following command:

```
netsh interface ipv6 add address "Local Area Connection" 2001:db8:290c:1291::1
```

Adding Default Gateways

To configure a default gateway, you can use the ***netsh interface ipv6 add route*** command and add a default route ***(::/0)*** with the following syntax:

```
netsh interface ipv6 add route [prefix=]::/0 [interface=]InterfaceNameorIndex
[[nexthop=]IPv6Address] [[siteprefixlength=]Length] [[metric=]MetricValue] [[publish=]
no|yes|immortal] [[validlifetime=]Time|infinite] [[preferredlifetime=]Time|infinite]
[[store=]active|persistent]
```

- prefix The IPv6 address prefix and prefix length for the default route. For other routes, you can substitute ::/0 with AddressPrefix/PrefixLength.
- interface The connection or adapter’s name or interface index.
- nexthop If the prefix is for destinations that are not on the local link, the next-hop IPv6 address of a neighboring router.
- siteprefixlength If the prefix is for destinations on the local link, you can optionally specify the prefix length for the address prefix assigned to the site to which this IPv6 node belongs.
- metric A value that specifies the preference for using the route. Lower values are preferred.
- publish As an IPv6 router, this option specifies whether the subnet prefix corresponding to the route will be included in router advertisements and whether the lifetimes for the prefixes are infinite (the immortal option).
- validlifetime The lifetime over which the route is valid. Time values can be expressed in days, hours, minutes, and seconds (for example, 1d2h3m4s). The default value is infinite.
- preferredlifetime The lifetime over which the route is preferred. Time values can be expressed in days, hours, minutes, and seconds. The default value is infinite.
- store How to store the route, either active (route is removed upon system restart) or persistent (route remains after restart), which is the default.
  For example, to add a default route that uses the interface named “Local Area Connection” with a next-hop address of **fe80::2aa:ff:fe9a:21b8** you use the following command:

```
netsh interface ipv6 add route ::/0 "Local Area Connection" fe80::2aa:ff:fe9a:21b8
```

Adding DNS Servers

To configure the IPv6 addresses of DNS servers, you can use the ***netsh interface ipv6 add dnsserver*** command with the following syntax:

```
netsh interface ipv6 add dnsserver [name=]InterfaceName [[address=]IPv6Address]
[[index=]PreferenceValue]
```

- name The connection or adapter’s name.
- address The IPv6 address of the DNS server.
- index The preference for the DNS server address.
  By default, the DNS server is added to the end of the list of DNS servers. If an index is specified, the DNS server is placed in that position in the list and the other DNS servers are moved down the list.
  For example, to add a DNS server with the IPv6 address **2001:db8:99:4acd::8** that uses the interface named “Local Area Connection,” you use the following command:

```
netsh interface ipv6 add dnsserver "Local Area Connection" 2001:db8:99:4acd::8
```

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Written by Admin