TCP/IPv4 Configurable Registry Settings

The following parameters receive default values during the initialization of the TCP/IPv4 components. A few of the parameters are visible in the registry by default, but most must be created in order to modify the default behaviour of the TCP/IP protocol driver.

All of the TCP/IP parameters are registry values located under the **HKEY_LOCAL_MACHINE\Comm\Tcpip\Parms** registry key.

Network adapter-specific values are listed under subkeys for each network adapter. Depending on whether or not the system or network adapter is DHCP-configured, and on whether or not static override values have been specified, there may be values that have both DHCP and statically configured values. Either removing and reinserting the network adapter, or calling the appropriate IP Helper functions, is generally required for a change in any of these values to take effect.

The following table shows the registry values for the **HKEY_LOCAL_MACHINE\Comm\Tcpip\Parms** registry key.

Value : type	Description
ArpUseEtherSNAP : REG_DWORD	Default setting is 0. This value can be set either to 0 (False) or 1 (True). Setting this value to 1 forces TCP/IP to transmit Ethernet packets using 802.3 SNAP encoding. By default, the stack transmits packets in DIX Ethernet format. It will always receive both formats.
AutoCfg	This value specifies whether Automatic IP is enabled or disabled. This value can be set either to 0 (False) or to 1 (True). This value behaves as the default value for the adapter-specific value of the same name, for example setting this value to 1 means all adapters will default to having Automatic IP enabled.
DefaultTOS : REG_DWORD	Default setting is 0. The valid range for this value is 1–0xFF (hexadecimal). This value specifies the default Type of Service (TOS) value set in the header of outgoing IP packets. For a definition of the values, see RFC 791.
DefaultTTLREG : REG_DWORD	Default setting is 128. The valid range for this value is 1–0xFF (hexadecimal). This value specifies the default Time To Live (TTL) value set in the header of outgoing IP packets. The TTL determines the maximum amount of time an IP packet may live in the network without reaching its destination. It

	is effectively a limit on the number of routers an IP packet may pass through before being discarded.
EnableDeadGWDetect : REG_DWORD	Default setting is 0 (False). This value can be set to either 0 (False) or 1 (True). Setting this value to 1 causes TCP to perform dead gateway detection. With this feature enabled, TCP may ask IP to change to a backup gateway if a number of connections are experiencing difficulty. Backup gateways can be defined by using the Route utility or the IP Helper API.
EnableDHCP	This value specifies whether DHCP is enabled. This value can be either 0 (False) or 1 (True). This value behaves as the default value for the adapter-specific value of the same name, for example setting this value to 1 means all adapters will default to having Automatic IP enabled.
IGMPLevel : REG_DWORD	Default setting is 2. This value can be set to 0, 1, or 2. This value determines to what extent the system can support IP multicasting and how fully it participates in the Internet Group Management Protocol (IGMP). Setting this value to 0, allows the system to provide no multicast support. Setting this value to 1, allows the system to send IP multicast packets, but not to receive them. Setting this value to 2, allows the system to send IP multicast packets and to participate fully in the IGMP to receive multicast packets. For more information, see Internet Group Management Protocol (IGMP).
IPEnableRouter : REG_DWORD	Default setting is 0 (False). This value can be set to either 0 (False) or 1 (True). Setting this value to 1 (True) causes the system to route IP packets between the networks to which it is connected. **Security Note** Enabling routing can potentially compromise network security.
NoIdleIfAdapter : REG_DWORD	Default setting is 1 (True). This value controls going into Idle mode during TCP/IP communications, and is independent of the **NoIdleIfConnected** value. Setting this value to TRUE, keeps the device from going into idle mode as long as there is a network adapter in use in the device. Setting this value to FALSE allows a device

	to be suspended when a network adapter is in use.
NoIdleIfConnected : REG_DWORD	This value controls going into Idle mode during TCP/IP communications, and is independent of the **NoIdleIfAdapter** value. Setting this value to 0 (FALSE), allows the device to enter Idle mode even in the middle of communicating with another device, or over loopback. Setting this value to TRUE keeps the device from going into idle mode and makes the device maintain an active TCP/IP connection, even if there is no active network adapter.
SackOpts : REG_DWORD	Default setting is 1 (True). This value controls whether or not Selective Acknowledgment (SACK, specified in RFC 2018) support is enabled. This value can be either 0 (False) or 1 (True). For more information about SACK, see TCP Selective Acknowledgment.
TCP1323Opts : REG_DWORD	This subkey has no default value. The default behavior is: do not initiate options but provide them if requested. This value controls RFC 1323 timestamps and window-scaling options. Time stamps and window scaling are enabled by default, but can be manipulated with flag bits. Bit 0 controls window scaling, and bit 1 controls timestamps. This subkey can have the following values: • 0 Disables RFC 1323 options • 1 Enables window scaling only • 2 Enables timestamps only • 3 Enables both options
TcpMaxConnectResponseRetransmissions : REG_DWORD	Default setting is 2. The valid range for this value is 0–0xFF. This registry value controls how many times a SYN-ACK is retransmitted before canceling the attempt when responding to a SYN from a remote device.

Adapter-specific Values

You can configure the TCP/IP implementation for a specific network adapter that is bound to TCP/IP through the registry. For more information on network adapter binding, see Dynamic Adapter Binding and Managing Network Adapters.

The following table shows the adapter-specific values for the **HKEY_LOCAL_MACHINE\Comm*Adapter Name*\Parms\Tcpip** subkey.

NetDCU3:
HKEY_LOCAL_MACHINE\Comm\ETH8XX1\Parms\Tcpip

NetDCU4, NetDCU5, WinGTC1:
HKEY_LOCAL_MACHINE\Comm\SMSC11XFD1\Parms\Tcpip

NetDCU52:
HKEY_LOCAL_MACHINE\Comm\DM9CE1\Parms\Tcpip

NetDCU6, NetDCU7:
HKEY_LOCAL_MACHINE\Comm\AU1MAC1\Parms\Tcpip

Value : type	Description
AutoCfg : REG_DWORD	No value (enabled). This value specifies whether Automatic IP is enabled or disabled. This value can be set either to 0 (False) or to 1 (True).
AutoInterval : REG_DWORD	Default setting is 300. This value specifies the time interval in seconds used to check if a DHCP server is available to configure the device's adapter settings; for example, IP Address, SubnetMask, default gateway, DNS and WINS servers.
AutoIP : REG_SZ	This value specifies the last known AutoIP address used by this device. If there is no value present, a new IP address is generated.
AutoMask : REG_DWORD	Default setting is 255.255.0.0. This value specifies the default subnet mask for Automatic IP.
AutoSubnet : REG_SZ	Default setting is 169.254.0.0. This value specifies the default subnet for Automatic IP.
DefaultGateway : REG_MULTI_SZ	This value specifies the list of gateways to be used to route those packets not destined for a subnet that the device is directly connected to, and for which a more specific route does not exist. This value can be a set of valid IP addresses. This value is configurable from the Network Connections User Interface (UI). This value overrides the **DhcpDefaultGateway** value. There is only one active default gateway for the device at any point in time, so adding multiple addresses is only

	useful for redundancy. For more information, see Dead Gateway Detection.
DhcpGlobalInitDelayInterval : REG_DWORD	Default setting is 0. Specifies the initial delay in milliseconds between sending DHCP packets. This value can be any positive integer.
DhcpInitDelayInterval : REG_DWORD	Default setting is 0. Specifies the initial delay, in milliseconds, between sending DHCP packets. This key overrides **DhcpGlobalInitDelayInterval**. This value can be any positive integer.
DhcpMaxRetry : REG_DWORD	Default setting is 2. This value defines the maximum number of attempts made to obtain a DHCP address. This value can be any positive integer.
DhcpNoMacCompare : REG_DWORD	Default setting is 0. If this flag is set, the Media Access Control (MAC) address in DHCP packets returned from the server is compared to the local interface, and if it does not match, the packet is discarded.
DhcpOptions : REG_BINARY	By default, Windows CE 3.0 and later query for the IP address, default gateway, subnet mask, DNS server, and WINS server. The values that the server returns, however, are not placed under **DhcpOptions** unless you create the value names. Creating value names under this key in accordance with RFC 2132 allows you to specify the DHCP options for the server to return. The valid range for this value is 1–0xFF (hexadecimal). For more information, see DhcpOptions.
DhcpRetryDialogue : REG_DWORD	Default setting is 2. This value defines the number of times DHCP retries obtaining an IP address before a dialog box is displayed with one of the following messages: "DHCP was unable to obtain an IP address. If the net card is removable, then you can remove/reinsert it to have DHCP make another attempt to obtain an IP address for it. Otherwise, you can statically assign an address," or, if the client's lease is still valid, "A DHCP Server could not be contacted. Using cached lease information," or, if the lease is no longer valid, "Your IP address lease has expired. DHCP was unable to renew your lease."
DhcpSendOptions : REG_BINARY	This value is not set by default. This registry key stores the options that you would like to send to the DHCP server. These options need to be valid and recognizable by the server. These options are copied into the DHCP packet. For more information, see DhcpSendOptions.
DNS : REG_MULTI_SZ	This value is not set by default. This value can be any valid IP address. This value stores the IP address of the DNS name server. There can be two DNS servers listed.
DNSDomain : REG_SZ	This value is not set by default. This value stores the domain name that is used by the network to which the device is connected. This value can be any domain name, such as example.microsoft.com.
DNSTimeOut	Default value is set to 3000. This value specifies the length of time, in milliseconds, that name resolution waits for a

	response from the DNS server.
DontAddDefaultGateway : REG_DWORD	Default setting is 0. When you install PPTP, a default route gets installed for each LAN adapter. You can disable the default route on an adapter by adding this value and by then setting it to 1. After doing so, you may need to configure static routes for hosts that are reached using a router other than the default gateway. This value can be either 0 (False) or 1 (True).
EnableDhcp : REG_DWORD	Default setting is 0. This value can be either 0 (False) or 1 (True). If this value is set to 1, the DHCP client service will attempt to use DHCP to configure the first IP interface on this adapter. This value is configurable from the Network Connections User Interface (UI).
IPAddress : REG_MULTI_SZ	This value is not set by default. This value specifies the IP addresses of the IP interfaces to be bound to the adapter. This value is configurable from the Network Connections User Interface (UI). For more information, see Manually Configuring an IPv4 Address.
MTU : REG_DWORD	Default setting is 0xFFFFFFFF (hexadecimal). The valid range for this value is 68 - the MTU of the underlying network. This parameter overrides the default Maximum Transmission Unit (MTU) for a network interface. The MTU is the maximum packet size in bytes that the transport will transmit over the underlying network. The size includes the transport header. An IP datagram may span multiple packets. Values larger than the default for the underlying network will result in the transport using the network default MTU. Values smaller than 68 will result in the transport using an MTU of 68. For more information, see Maximum Transmission Unit (MTU).
SubnetMask : REG_MULTI_SZ	This value is not set by default. This value specifies the subnet masks to be used with the IP interfaces bound to the adapter. This value can be any set of valid IP addresses. This value is configurable from the Network Connections User Interface (UI).
TcpDelAckTicks : REG_DWORD	Default setting is 2. Specifies the number of milliseconds to use for the delayed-ACK timer on a per-interface basis. By default, the delayed-ACK timer is 200 milliseconds. This value can be any number from 2 to 6.
TcpInitialRTT : REG_DWORD	Default setting is 3. This value controls the initial time-out used for a TCP connection request on a per-interface basis. Use caution when tuning with this value, because exponential backoff is used. Setting this value larger than 3 will result in much longer time-outs to nonexistent

	addresses. The valid range for this value is 0–0xFFFF (hexadecimal).
TcpWindowSize : REG_DWORD	Default setting is 0. The valid range for this value is 0–0x3FFFFFFF (hexadecimal). Values greater than 64K can be achieved only when connecting to other systems that support RFC 1323 Window Scaling. RFC 1323 Window Scaling is discussed in the TCP section of this document.
WINS : REG_MULTI_SZ	This value is not set by default. This value stores the IP address of the WINS name server. There can be two WINS servers listed. This value can be any valid IP address.
WinsBroadcastTimeOut : REG_DWORD	Default setting is 500. This value stores the length of time, in milliseconds, that name resolution waits for a response to the IP subnet broadcast.
WinsTimeOut : REG_DWORD	Default setting is 2000. This value stores the length of time, in milliseconds, that name resolution waits for a response from the WINS server.

Host Name

The host name can be configured through the **HKEY_LOCAL_MACHINE\Comm\Tcpip\Hosts** subkey. When an application calls gethostbyname") or getaddrinfo, the registry is queried first, before a DNS or WINS request is sent. If the host name is found in the registry, the registry values are returned.

The following table shows the values for the **HKEY_LOCAL_MACHINE\Comm\Tcpip\Hosts*Host Name*** subkey.

Value : type	Description
Aliases : REG_MULTI_SZ	This value stores the aliases by which this host is known.
ExpireTime : REG_BINARY	If the current time, obtained by calling **GetCurrentFT**, exceeds the value in **ExpireTime**, the entire ***Host Name*** subkey is deleted the next time that **gethostbyname** is called. The length of this value is 8 bytes.
ipaddr : REG_BINARY	This value stores the IPv4 addresses associated with this host name. The length of this value is 4 bytes per address.
ipaddr6 : REG_BINARY	This value stores the IPv6 addresses associated with this host name. The length of this value is 20 bytes per address (16 bytes for address and 4 bytes for Scope ID).

AFD Registry Settings

The following table shows the values for the **HKEY_LOCAL_MACHINE\Comm\AFD** subkey.

Value: type	Description

ResolverCheckCacheFirst : REG_DWORD	Default setting is 1 (True). This value controls whether or not the cache is checked first when resolving names, before the WINS and DNS servers are queried. This subkey can have a value can be set either to 0 (False) or 1 (True).
DgramBuffer : REG_DWORD	This key is no longer supported. In Windows CE .NET 4.1, applications can use the SO_RCVBUF socket option to override this setting on a per-socket basis.

Device Name

The device name can be configured by setting the **Name** value for the **HKEY_LOCAL_MACHINE\Ident** key. If an OEM decides to specify a name, this value of size REG_DWORD stores the name of the device. For more information on assigning a device name, see Assigning an IP Address to a Device.

See Also

TCP/IP Registry Settings

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