

## Network Tuning Parameters

Tunable network parameters supported by the Alacritech release six drivers for Microsoft Windows.

Because the Alacritech [Non-SNP Aware](#) TCP offload (TOE) drivers start from a different code base than the Microsoft TCP stack and have different performance priorities than non-accelerated drivers, the Alacritech drivers do not support all network tuning parameters supported by the Microsoft TCP/IP stack. Furthermore, in some cases where a parameter may be supported, its default value, as well as its effect on the TCP stack may differ between Alacritech and Microsoft. This document is an attempt to shed some light on which parameters Alacritech supports, as well as how their effects may differ from that of the Microsoft TCP stack.

Alacritech [ATCP](#) network drivers recognize the following standard Microsoft TCP parameters. The Microsoft defaults displayed below are the values for Windows 2000 SP2. Other Windows operating system/service pack versions may have differing default values.

### Global TCP Parameters

The following global values can be created by using the registry editor to add the appropriate value to the HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters key:

#### ArpCacheLife

Description: Arp cache entry timeout in seconds.  
Value Type: REG\_DWORD  
Range: 0-0xFFFFFFFF  
Microsoft Default: 2 min for unused values, 10 minutes or the value of ArpCacheMinReferencedLife, if referenced.  
Alacritech Default: Release 6: 20 minutes. ArpCacheMinReferencedLife is not supported.  
Release 7: 10 minutes. ArpCacheMinReferencedLife is not supported.

#### DefaultTTL

Description: Default IP Time-To-Live value (number of hops).  
Value Type: REG\_DWORD  
Range: 0-0xFF (0-255)  
Microsoft Default: 0x80 (128)  
Alacritech Default: Release 6: 0x40 (64)  
Release 7: 0x80 (128)

#### GlobalMaxTcpWindowSize

Description: Global maximum TCP window size.  
Value Type: REG\_DWORD  
Range: 0-0x3FFFFFFF. Note that values greater than 0xFFFF (64k) are only valid when used in conjunction with window scaling. See the **Tcp1323Opts** parameter for more details.  
Microsoft Default: None  
Alacritech Default: None

#### KeepAliveInterval

Description: TCP Keepalive retransmission interval in milliseconds.  
Value Type: REG\_DWORD  
Range: 0-0xFFFFFFFF  
Microsoft Default: 0x000003FC ( 1000 ms, 1 sec )

Alacritech Default:     **Release 6:** 0x000124F8 ( 75000 ms, 75 sec )  
                          **Release 7:** 0x000003FC ( 1000 ms, 1 sec )

### KeepAliveTime

Description:            TCP Keepalive time in milliseconds  
Value Type:            REG\_DWORD  
Range:                  0-0xFFFFFFFF  
Microsoft Default:     0x006DDD00 ( 7200000 ms, two hours )  
Alacritech Default:    0x006DDD00 ( 7200000 ms, two hours )

### Tcp1323Opts

Description:            Defines RFC 1323 options  
Value Type:            REG\_DWORD  
Range:                  0 - No RFC 1323 support  
                          1 - Window scaling enabled (not supported by ATCP)  
                          2 - Timestamps enabled  
                          3 - Both enabled  
Microsoft Default:     None, not initiated, but supported.  
Alacritech Default:    None, Window scaling is not supported by Alacritech.  
                          Timestamps are supported but not initiated by default.

### TcpInitialRTT

Description:            Initial RTT value  
Value Type:            REG\_DWORD  
Range:                  0-0xFFFF ( 0 - 64k )  
Microsoft Default:     3  
Alacritech Default:    3

### TcpMaxDataRetransmissions

Description:            Maximum retransmissions before dropping connection.  
Value Type:            REG\_DWORD  
Range:                  0-0xFFFFFFFF  
Microsoft Default:     5  
Alacritech Default:    5

### TcpMaxDupAcks

Description:            Number of duplicate ACKS received before triggering fast-retrans  
Value Type:            REG\_DWORD  
Range:                  1-3  
Microsoft Default:     2  
Alacritech Default:    3

### TcpNumConnections

Description:            Maximum total connections allowed.  
Value Type:            REG\_DWORD  
Range:                  0-0xFFFFFE  
Microsoft Default:     0xFFFFFE  
Alacritech Default:    0xFFFFFE Of course there are limitations on the number that can be in  
                          fastpath based on the hardware.

### TcpTimedWaitDelay

Description:            Time wait delay in seconds (typically 2MSL).  
Value Type:            REG\_DWORD  
Range:                  0x001E-0x012C ( 30 - 300 )  
Microsoft Default:     0xF0 ( 240 )  
Alacritech Default:    0x3C ( 60 )

### TcpWindowSize

Description: Global maximum TCP window size: See also **GlobalMaxTcpWindowSize**

Value Type: REG\_DWORD

Range: 0-0x3FFFFFFF. Note that values greater than 0xFFFF (64k) are only valid when used in conjunction with window scaling. See the **Tcp1323Opts** parameter for more details. The value selected should always be an even multiple of the Max Segment Size for greatest efficiency.

Microsoft Default: The smaller of:  
 \* 0xFFFF (65535)  
 \* GlobalMaxTcpWindowSize

\* The larger of  
 - 4 x the Max Segment Size  
 - 16348 rounded up to the nearest multiple of the MSS

Typically, if neither jumbo frames nor window scaling are being used, and the medium is ethernet, the MSS is 1460, and the TCP window size will be 17520 (12 x 1460).

Alacritech Default: The smaller of:  
 \* GlobalMaxTcpWindowSize  
 \* 16060 ( 11 \* 1460 ) for 100Mb products  
 or  
 \* 65535 for 1000Mb products. Actually, internally it's ( 45 \* 1460 ) = 65700, but since that's larger than the legal value (without window scaling), it's advertised as 65535.

### Per Interface TCP Parameters

The following interface specific values can be set by adding the appropriate value to the **HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\<NetCfgInstanceId>** key for a particular interface:

#### MTU

Description: MTU value of specified interface. This is limited by the MTU reported by the underlying interface. It is usually not necessary to adjust this setting, as both Alacritech and Microsoft support Path MTU Discovery.

Value Type: REG\_DWORD

Range: 0x44-<MTU of underlying network> ( 68-<network MTU> )

Microsoft Default: 0xFFFFFFFF

Alacritech Default: None. Note that even the Microsoft and Alacritech don't think about this parameter in quite the same way, the net result is the same. It will have no effect, unless 68 < MTU < network MTU.

### TcpWindowSize

Description: Maximum TCP Window size for the specified interface.

Value Type: REG\_DWORD

Range: same as global value above

Microsoft Default: same as global value above

Alacritech Default: same as global value above