

Advanced Settings Definitions for the Intel® PRO Adapter Drivers

Adaptive Inter-Frame Spacing

Compensates for excessive Ethernet packet collisions on the network. By default, this setting is set to 1, which enables the feature.

The recommended setting (1) works best for most computers and networks by dynamically adapting to the network traffic conditions. This dynamic mode is active only when the value is set to 1. However, in some rare cases you might obtain better performance by manually setting the spacing value. Setting a value forces a static gap between packets.

Increasing the value increases the delay between frames being transmitted.

Supported adapters	All
Default	1: enabled
Range	0-255

Coalesce Buffers

Optimizes transmit performance by customizing the number of Coalesce Buffers, which enable the adapter to join data segments before packet transmission.

The Coalesce Buffers setting must be configured to work with the Transmit Descriptors setting. The Coalesce Buffers setting should be 30 - 50% of Transmit Descriptors. If the Coalesce Buffers setting is not modified to match the Transmit Descriptors setting, transmit performance might not be enhanced.

The Coalesce Buffers setting significantly increases the transmit performance.

Supported adapters	All
Default	128
Range	16-768

Fast Transmit Completion

Frees Transmit Descriptors for reuse before packets are sent out on the network.

- With Fast Transmit Completion disabled, the adapter must wait until packets are sent to reuse Transmit Descriptors.

- With Fast Transmit Completion enabled, the adapter reuses Transmit Descriptors sooner, enabling the adapter to enhance transmit performance. Supports 82543 and 82544-based adapters.

Default On
Range On, Off

Enable PME

Enables or disables Wake on capabilities of the adapter on computers which have older Advanced Power Management (APM) implementations. Wake on enables the adapter to come out of a standby or power off state when it receives certain packet types, such as ARP packets.

- Disabling this feature disables all Wake on settings on computers using older power management implementations.
- Enabling this feature permits the adapter to respond to Wake on signals. To configure the adapter to respond to specific packet types, see the Wake on settings information later in this topic.
- The Hardware Default value forces the adapter to configure Wake on capabilities based on the system hardware.
- The No Action value enables the adapter to use the operating system's default.

If you would like to disable all Wake on settings, set this feature to disable. Otherwise, set this feature to No Action.

Supported adapters 82544-based adapters.
Default Disabled
Range Enabled, Disabled

Flow Control

Enables the adapter to send or receive flow control frames. The transmit path is paused for the time specified in the received flow control frame. These settings help fine tune network performance by preventing packets from dropping.

Supported adapters 82542-based, transmit only. 82543 and 82544-based adapters, transmit and receive.
Default Enabled
Range Disabled, Enabled, Hardware Default, Receive Pause Frames, Transmit Pause Frames

Jumbo Frames

Enables or disables Jumbo Frame capability. Jumbo Frames can increase throughput and decrease CPU utilization by putting more data in each frame, thereby sending out fewer frames. The standard Ethernet frame size is 1514 bytes, while Jumbo Frames can contain 4088, 9014, or 16128 bytes.

Enable Jumbo Frames only if devices across the network support them and are configured to use the same frame size. When setting up Jumbo Frames on other network devices, be aware that network devices calculate Jumbo Frame sizes differently. Some devices include the header information in the frame size while others do not. Intel adapters *do not* include header information in the frame size.

Supported adapters All

Default	Disabled
Range	Disabled (1514), 4088, 9014, and 16128 bytes. (Set the switch 4 bytes higher for CRC, plus 4 bytes if using VLANs.)

Locally Administered Address

Overrides the virtual, user-assigned MAC address of the adapter. This setting does not override the adapter's physical MAC address. To enter a new network address, type a 12-digit hexadecimal number in this box.

Supported adapters All

Default	None
Range	0000 0000 0001 - FFFF FFFF FFFD

Exceptions:

- Do not use a multicast address (Least Significant Bit of the high byte = 1).
- Do not use all zeros or all Fs.

Not Present setting: reverts to original network address of the adapter.

NOTE: In a team, Intel[®] PROSet uses either:

- The team's LAA if the team has an LAA configured, or
- The primary adapter's permanent MAC address if the team does not have an LAA configured

- Intel PROSet *does not use* an adapter's LAA if the adapter is the primary adapter in a team and the team has an LAA.

Offload Receive TCP Checksum

Enables the adapter to verify the TCP or UDP checksum of incoming packets.

With Offloading disabled, the operating system verifies the TCP checksum.

With Offloading enabled, the adapter completes the verification for the operating system.

This feature enhances reception performance and reduces CPU utilization.

Supported operating systems	Windows XP 64 bit Edition, Windows XP Professional, Windows .NET Server
Supported	82559-based adapters and later.
Default	<ul style="list-style-type: none"> • Windows XP 64 bit Edition, Windows XP Professional, Windows .NET Server: On • Windows 2000: Off
Range	On, Off

Offload TCP Segmentation

Enables the adapter hardware to segment data into valid Ethernet frames.

- With TCP Segmentation disabled, the operating system software segments the data before sending it to the adapter for transmission.
- With TCP Segmentation enabled, the adapter segments the data into frames.

Because the adapter hardware is able to complete data segmentation much faster than operating system software, this feature greatly increases transmission performance. In addition, the adapter consumes fewer CPU resources.

Supported operating systems	Windows XP 64 bit Edition, Windows XP Professional, Windows .NET Server
Supported	82544-based adapters
Default	On
Range	Off = do not advertise this feature; On = advertise this feature.

Offload Transmit IP Checksum

Enables the adapter to compute the IP checksum of outgoing packets.

With Offloading disabled, the operating system verifies the IP checksum.

With Offloading enabled, the adapter completes the verification for the operating system.

This feature enhances IP transmit performance and reduces CPU utilization.

Supported operating systems	Windows 2000, Windows XP 64 bit Edition, Windows XP Professional, Windows .NET Server
Supported	82559-based adapters and later.
Default	On
Range	On, Off

Offload Transmit TCP Checksum

Enables the adapter to compute the TCP or UDP checksum of outgoing packets.

With Offloading disabled, the operating system verifies the TCP checksum.

With Offloading enabled, the adapter completes the verification for the operating system.

This feature enhances TCP and UDP transmit performance and reduces CPU utilization.

Supported operating systems	Windows 2000, Windows XP 64 bit Edition, Windows XP Professional, Windows .NET Server
Supported	82559-based adapters and later.
Default	On
Range	On, Off

NOTE: Set this feature to Off when the server is supporting DOS-based clients.

QoS Packet Tagging

Enables the adapter to send and receive IEEE 802.3ac tagged frames, which include [802.1p](#) QoS and 802.1Q VLAN indications.

Supported adapters	All
Default	Disabled
Range	Enabled, Disabled

Receive Descriptors

Defines the number of Receive Descriptors, which are data segments that enable the adapter to allocate received packets to memory. Each received packet requires one Receive Descriptor, and each descriptor uses 2kb of memory.

You might choose to increase the number of Receive Descriptors if you notice a significant decrease in the performance of received traffic. If receive performance is *not* an issue, use the default setting appropriate to the adapter.

Adapter Controller	Default	Range
82542-based	160	80 – 768
82543-based	160	80 – 256
82544-based	160	80 – 4096

Retransmit Inter-Frame Spacing

Increases the delay between frame retransmissions. Although there is a built-in Ethernet algorithm that adapters use for retransmitting frames after collisions, increasing the delay can improve network performance if there are an abnormally large number of collisions on the network.

Supported adapters All

Default 6

Range 0-15

Transmit Descriptors

Defines the number of Transmit Descriptors, which are data segments that enable the adapter to track transmit packets in the system memory. Depending on the size of the packet, each transmit packet requires one or more Transmit Descriptors.

You might choose to increase the number of Transmit Descriptors if you notice a possible problem with transmit performance. Although increasing the number of Transmit Descriptors can enhance transmit performance, Transmit Descriptors do consume system memory. If transmit performance is *not* an issue, use the default setting of 512.

Adapter Controller	Default	Range
82542-based	512	80 – 768
82543-based	512	80 – 256
82544-based	512	80 – 4096

Wake on Link Change

Wakes the computer if the network connection establishes link while the computer is in standby mode. You can enable the feature, disable it, or let the operating system use its default.

Supported operating systems	Windows 9x, Windows 2000, Windows XP, Windows .NET Server. This feature is not supported in Windows .NET Server for 64-bit Itanium(TM)-based Systems.
Range	Disabled, Forced, OS dependent
Default	Disabled

Wake On Settings

These settings refer to features that are activated by either the operating system or Intel® PROSet. The features behave differently or are not supported at all, depending on your version of Windows.

These Windows versions *do* support Wake On Settings: Windows 2000, Windows XP 64 bit Edition, Windows XP Professional, and Windows .NET Server. This feature is not supported in Windows .NET Server for 64-bit Itanium(TM)-based Systems.

Enabling Wake On Settings

You can use Intel PROSet to configure the Wake On setting the adapter uses.

To enable Wake on Settings

1. In Intel PROSet, click the **Advanced** tab.
2. In the **Setting** list box, click **Wake on Settings**.
3. In the **Value** list, click the appropriate Wake On setting.
4. Click **OK** or **Apply**.

Available Settings

These Wake On settings are available in Intel PROSet:

Setting	Description
Disabled	Adapter will not use Wake On settings.
Wake on Magic Packet	Enables the adapter to wake up in response to receiving a Magic Packet. A Magic Packet is a packet containing 16 contiguous copies of the receiving adapters Ethernet address. When you

	configure this feature, Intel PROSet overrides the operating system value for this feature.
Wake on Directed Packet	<p>Enables the adapter to wake up when the adapter receives a Directed Packet, which is a unicast packet sent to the adapter's MAC address.</p> <p>The protocol must enable this wake up method in the driver. Deselecting this feature tells the driver to ignore any protocol request to enable this wake up method.</p>
Wake on Magic and Directed Packets	Enables the adapter to wake up when it receives a Magic Packet or a Directed Packet.
OS Controlled	Gives the operating system complete control of Wake on Settings.

NOTE: If multiple IP addresses are configured for one adapter, the operating system may request to wake up on ARP patterns to all of the configured addresses. The adapter will only awaken in response to ARP packets querying the first IP address in the list.

NOTE: Wake On settings do not include the ability to wake a machine from shutdown (S5) state. This state is controlled by the Enable PME setting, which is also available on the Advanced Tab. Even if Wake On settings are disabled, the ability to awaken from S5 is determined by the Enable PME setting.

As long as the adapter driver is enabled, PME settings will work. Once the driver is disabled, however, the device reverts to its hardware default, which may or may not allow the computer to wake from shutdown.

Restore Default button

This button resets the currently selected Advanced Setting with that setting's default value. See the settings listed above for default values. (This option is not available for every setting.)