## Synopsys Ethernet MAC IP

The Synopsys Ethernet MAC IP enables the host to communicate data using the Ethernet protocol (IEEE 802.3) at 10 or 100 Mbps speeds.

The IP is composed of three main layers:

1. Media Access Controller (MAC),
2. MAC Transaction Layer (MTL) and
3. MAC DMA Controller (MDC).

**MAC Transaction Layer (MTL)**The MAC Transaction Layer provides FIFO memory to buffer and regulate the frames between the application system memory and the DWC\_xgmac IP. The native interface enables data transfer between the host and the MAC transaction layer through a simple handshake protocol.  
The MTL block also provides a reliable synchronization mechanism for data transfer between the application and DWC\_xgmac clock domains. The MTL has an asynchronous FIFO on the transmit and receive paths, which are 68 bits or 133 bits wide in 64-bit and 128-bit mode respectively.

The MTL block communicates with the application through the Application Transmit Interface (ATI), Application Receive Interface (ARI), and DWC\_xgmac Control Interface (MCI). Default and optional I/O signals are discussed in *Signal Descriptions* chapter.