



Table 3-7. Transmit Descriptor (TDESC) Layout

	63		30	29	28	24	23	20	19		0
0	Buffer Address [63:0]										
8	NR			DEXT	NR	DTYP		NR			

3.3.3 Legacy Transmit Descriptor Format

To select legacy mode operation, bit 29 (TDESC.DEXT) should be set to 0b. In this case, the descriptor format is defined as shown in Table 3-8. The address and length must be supplied by software. Bits in the command byte are optional, as are the Checksum Offset (CSO), and Checksum Start (CSS) fields.

Table 3-8. Transmit Descriptor (TDESC) Layout – Legacy Mode

	63		48	47	40	39	36	35	32	31	24	23		16	15		0
0	Buffer Address [63:0]																
8	Special			CSS		RSV	STA	CMD	CSO			Length					

Table 3-9. Transmit Descriptor Legacy Descriptions

Transmit Descriptor Legacy	Description
Buffer Address	Buffer Address Address of the transmit descriptor in the host memory. Descriptors with a null address transfer no data. If they have the RS bit in the command byte set (TDESC.CMD), then the DD field in the status word (TDESC.STATUS) is written when the hardware processes them.
Length	Length is per segment. The maximum length associated with any single legacy descriptor is 16288 bytes. Although a buffer as short as one byte is allowed, the total length of the packet, before padding and CRC insertion must be at least 48 bytes. Length can be up to a default value of 16288 bytes per descriptor, and 16288 bytes total. In other words, the length of the buffer pointed to by one descriptor, or the sum of the lengths of the buffers pointed to by the descriptors can be as large as the maximum allowed transmit packet. Descriptors with zero length transfer no data. If they have the RS bit in the command byte set (TDESC.CMD), then the DD field in the status word (TDESC.STATUS) is written when the hardware processes them.
CSO	Checksum Offset The Checksum offset field indicates where, relative to the start of the packet, to insert a TCP checksum if this mode is enabled. (Insert Checksum bit (IC) is set in TDESC.CMD). Hardware ignores CSO unless EOP is set in TDESC.CMD. CSO is provided in unit of bytes and must be in the range of the data provided to the Ethernet controller in the descriptor. (CSO < length - 1). Should be written with 0b for future compatibility.



Transmit Descriptor Legacy	Description
CMD	Command field See Section 3.3.3.1 for a detailed field description.
STA	Status field See Section 3.3.3.2 for a detailed field description.
RSV	Reserved Should be written with 0b for future compatibility.
CSS	Checksum Start Field The Checksum start field (TDESC.CSS) indicates where to begin computing the checksum. The software must compute this offset to back out the bytes that should not be included in the TCP checksum. CSS is provided in units of bytes and must be in the range of data provided to the Ethernet controller in the descriptor (CSS < length). For short packets that are padded by the software, CSS must be in the range of the unpadded data length. A value of 0b corresponds to the first byte in the packet. CSS must be set in the first descriptor of the packet.
Special	Special Field See the notes that follow this table for a detailed field description.

Notes:

1. Even though CSO and CSS are in units of bytes, the checksum calculation typically works on 16-bit words. Hardware does not enforce even byte alignment.
2. Hardware does not add the 802.1Q EtherType or the VLAN field following the 802.1Q EtherType to the checksum. So for VLAN packets, software can compute the values to back out only on the encapsulated packet rather than on the added fields.
3. Although the Ethernet controller can be programmed to calculate and insert TCP checksum using the legacy descriptor format as described above, it is recommended that software use the newer TCP/IP Context Transmit Descriptor Format. This newer descriptor format allows the hardware to calculate both the IP and TCP checksums for outgoing packets. See [Section 3.3.5](#) for more information about how the new descriptor format can be used to accomplish this task.