

6.2.3 Data Field

The data field contains a sequence of n octets, where $46 \leq n \leq 1500$. Within this range, full data transparency is provided, in the sense that any arbitrary sequence of octet values may appear in the data field.

6.2.4 Frame Check Sequence Field

The frame check sequence (FCS) field contains a 4-octet (32-bit) cyclic redundancy check (CRC) value. This value is computed as a function of the contents of the source, destination, type and data fields (i.e., all fields except the frame check sequence field itself). The encoding is defined by the generating polynomial:

$$G(x) = x^{32} + x^{26} + x^{23} + x^{22} + x^{16} + x^{12} + x^{11} + x^{10} + x^8 + x^7 + x^5 + x^4 + x^2 + x + 1$$

(This polynomial is also used in the Autodin-II network; its properties are investigated in [8].)

Mathematically, the CRC value corresponding to a given frame is defined by the following procedure:

1. The first 32 bits of the frame are complemented.
2. The n bits of the frame are then considered to be the coefficients of a polynomial $M(x)$ of degree $n-1$. (The first bit of the destination address field corresponds to the x^{n-1} term and the last bit of the data field corresponds to the x^0 term.)
3. $M(x)$ is multiplied by x^{32} and divided by $G(x)$, producing a remainder $R(x)$ of degree ≤ 31 .
4. The coefficients of $R(x)$ are considered to be a 32-bit sequence.
5. The bit sequence is complemented and the result is the CRC.

The 32 bits of the CRC value are placed in the frame check sequence field so that the x^{31} term is the leftmost bit of the first octet, and the x^0 term is the rightmost bit of the last octet. (The bits of the CRC are thus transmitted in the order $x^{31}, x^{30}, \dots, x^1, x^0$.)

Appendix C discusses CRC implementation issues.

6.2.5 Frame Size Limitations

Given the limitations on the size of the data field specified in 6.2.3 and the 18 octet total size for the other four fields, the smallest valid frame contains 64 octets and the largest valid frame contains 1518 octets.