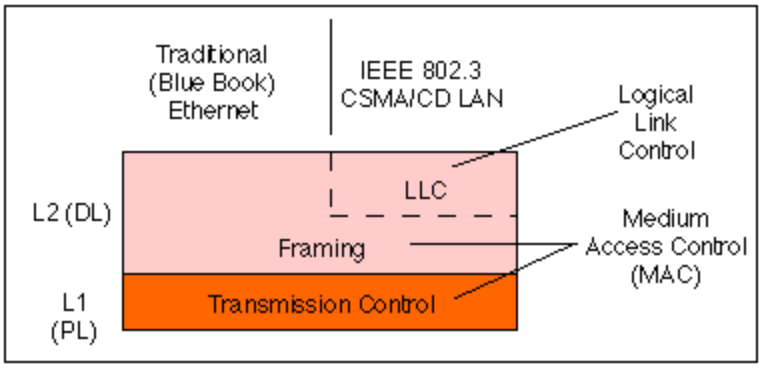
IEEE 802.3 Logical Link Control

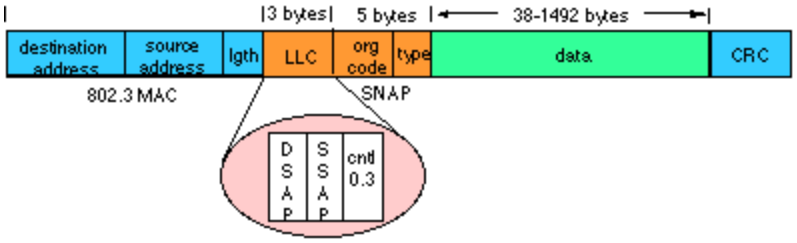
Extra information for course - not included in assessment.

The IEEE 802.3 standard for Ethernet defines an additional data link layer protocol called the Logical Link Control (LLC) protocol. This operates on top of the MAC protocol defined in the original Ethernet standard (the "Blue Book").



Relationship between the original Ethernet standard and the IEEE 802.3 standard

When the LLC protocol is used, the MAC layer SDU (the payload data) is further encapsulated, adding two additional headers. The format of the complete frame with the additional headers is shown below:



IEEE 802.3 LLC encapsulation for Ethernet

The extra headers comprises two parts:

- A Logical Link Control (LLC) protocol header
- A Sub Network Access Protocol (SNAP) header

The SNAP header is used when the LLC protocol carries IP packets and contains the information which would otherwise have been carried in the 2-byte MAC frame type field. Note that since the maximum size of Ethernet frame is fixed, the maximum size of SDU (payload data) is reduced to 1492 bytes (the MTU in IP) when LLC/SNAP encapsulation is used.

This format is used when sending IEEE STP BPDUs.

Historical Note

The LLC protocol is based on the HDLC link protocol and uses an extended 2-byte addres. The first address byte indicates a Destination Service Access Point (DSAP) and the second address a Source Service Access Point (SSAP). These identify the network protocol entities which use the link layer service.

A control field is also provided which may support a number of HDLC modes. These include Type 1 (connection-less link protocol), Type 2 (conenction-oriented protocol) and Type 3 (connection-less acknowledged protocol). Details of the LLC protocol are not covered by the course.

Gorry Fairhurst - *Date: 01/01/2001*