NIELIT Gorakhpur

The Three Set of Protocols:

- Three sets of protocols are defined to make PPP powerful: the **Link Control Protocol (LCP)**, two **Authentication Protocols (APs)**, and several **Network Control Protocols (NCPs)**.
- At any moment, a PPP packet can carry data from one of these protocols in its data field, as shown in Figure. There is one LCP, two APs, and several NCPs. Data may also come from several different network layers.
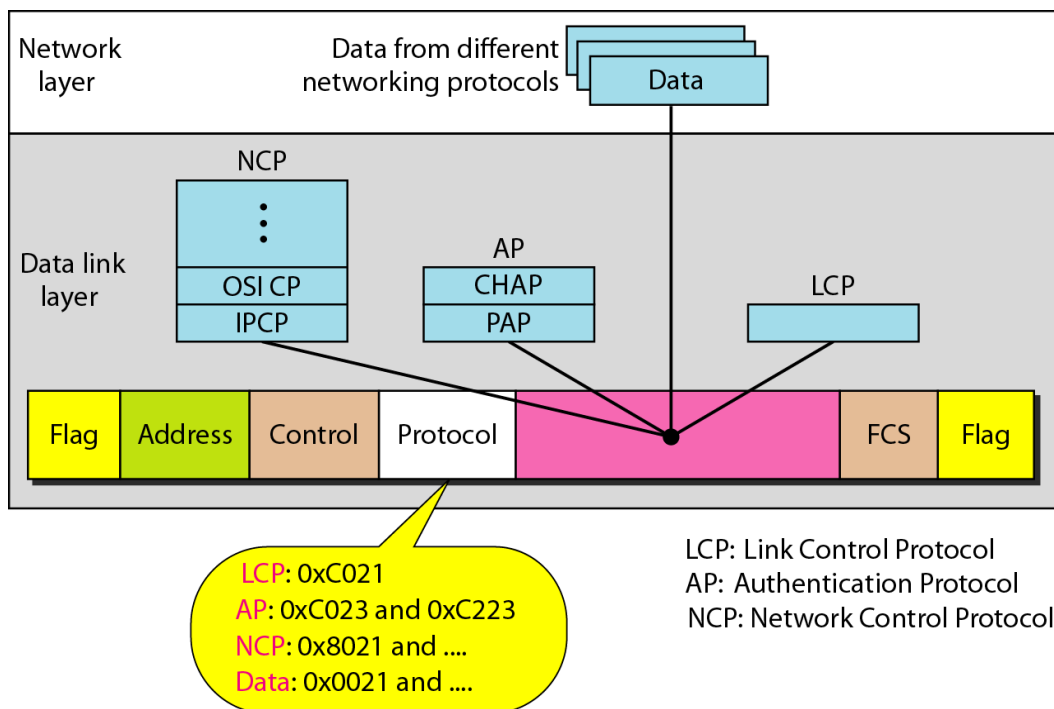
Link Control Protocol:

- The **Link Control Protocol** (LCP) is responsible for establishing, maintaining, configuring, and terminating links.
- It also provides negotiation mechanisms to set options between the two endpoints. Both endpoints of the link must reach an agreement about the options before the link can be established.
- All LCP packets are carried in the payload field of the PPP frame with the protocol field set to C021 in hexadecimal.
- The code field defines the type of LCP packet.

- The ID field holds a value that matches a request with a reply.
- The length field defines the length of the entire LCP packet. The information field contains information, such as options, needed for some LCP packets.
- There are many options that can be negotiated between the two endpoints.
- Options are inserted in the information field of the configuration packets. The information field is divided into three fields: option type, option length, and option data.
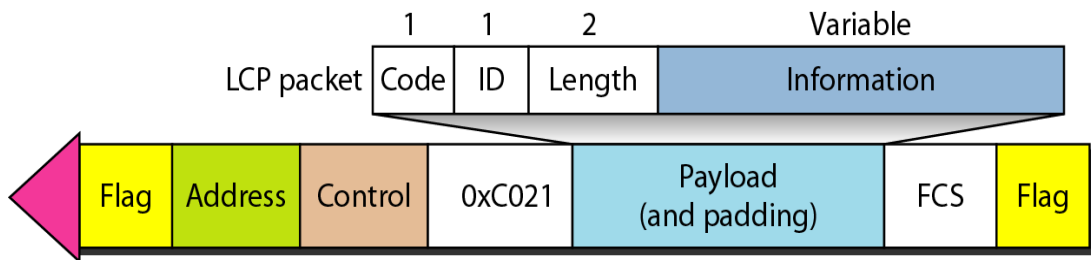
Authentication Protocols:

- Authentication plays a very important role in PPP because PPP is designed for use over dial-up links where verification of user identity is necessary.
- **Authentication** means validating the identity of a user who needs to access a set of resources.
- PPP has created two protocols for authentication. These protocols are used during the authentication phase.

    1) **Password Authentication Protocol (PAP)**
    2) **Challenge Handshake Authentication Protocol.**

Exercises:

A. **How do the three protocols make PPP more powerful?**

B. **"The Link Control Protocol (LCP) is responsible for establishing, maintaining, configuring, and terminating links". Justify the comment by explaining the format of LCP packet.**