Connection Oriented NFC LLCP connection

Introduction

NFC (near field communications) is based on RFID (radio frequency identification) technology.

The Logical Link Control Protocol (LLCP) specification provides the procedural means for the transfer of upper layer information units between two NFC Forum Devices. LLCP provides link activation, supervision, deactivation and also protocol multiplexing.

Connectionless Transport

Connectionless transport has minimum protocol overhead, it provides a service user an unacknowledged data transmission facility that does not require preparative steps to actually send service data units. It can also be used by applications that operate in a command/response model wherein a command is always followed by a response returned before the next command is sent.

Connectionless transport provides an unacknowledged data transmission service with minimum protocol complexity. This transport service is useful when higher layers provide any essential recovery and sequencing services so that replication of these services in the data link layer becomes needless. It may also prove useful in applications where guaranteed delivery of service data units is not essential. Connectionless transport does not require any prior connection establishment or terminating procedure, thus allows spontaneous exchange of service data units without a time consuming preamble.

The source and destination of each connectionless service data unit are uniquely determined by the SSAP (source service access point) and DSAP (destination service access point) field, respectively, in the data link PDU. Each combination of DSAP and SSAP forms a logical data link.

Connection oriented Transport

Connection oriented transport mode provides a data transmission service with sequenced and guaranteed delivery of service data units. Traffic is controlled by a numbering scheme known as the sliding window protocol. Connection oriented transport requires the preliminary setup of a data link connection and the assignment of resources for as long as the connection persists.

Connection oriented transport provides a data transmission service with sequenced and guaranteed delivery of service data units. Prior to the exchange of information-bearing PDUs, a data link connection is established between two service endpoints. The normal cycle of communication then consists of the transfer of PDUs (protocol data unit) containing information from one LLC to the other, acknowledged by PDUs in the opposite direction.

Each data link connection is uniquely identified by the pair of DSAP and SSAP included in the header of each LLC PDU. When opening a connection, the DSAP identifies the remote service endpoint for the intended data exchange and the SSAP identifies the local service endpoint. Once the connection is established, each LLC sends PDUs for that data link connection by alternately exchanging the DSAP and SSAP values such that each sent PDU identifies the source LLC’s SAP in the SSAP field and the destination LLC’s SAP in the DSAP field. During the lifetime of a data link connection, both LLCs maintain state information and manage receive buffers independently of any other data link connection.

Following figures shows the logical components of llcp.

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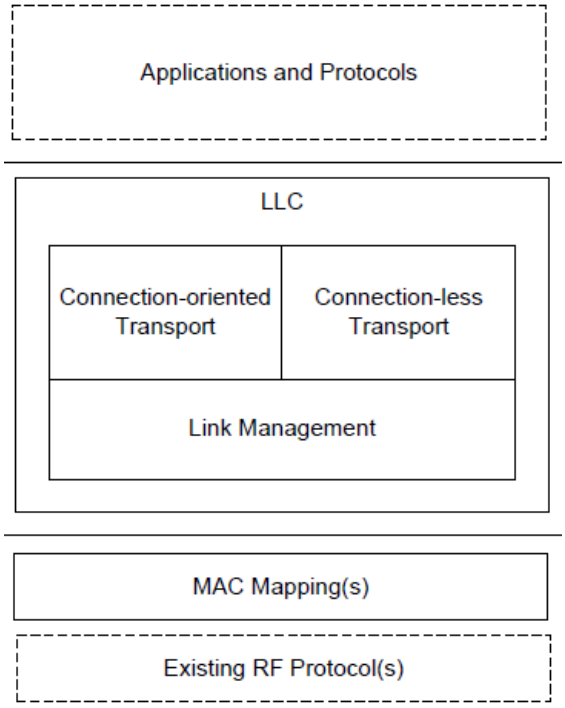

Examples

- Connection less example using Symbian C++ can be found here: NFC Chat Application with Symbian LLCP API
- Connection oriented example can be found from the following link.

Download the example for C7: Media:connectionorientedllcp.zip

References

- http://www.nfc-forum.org/specs/

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